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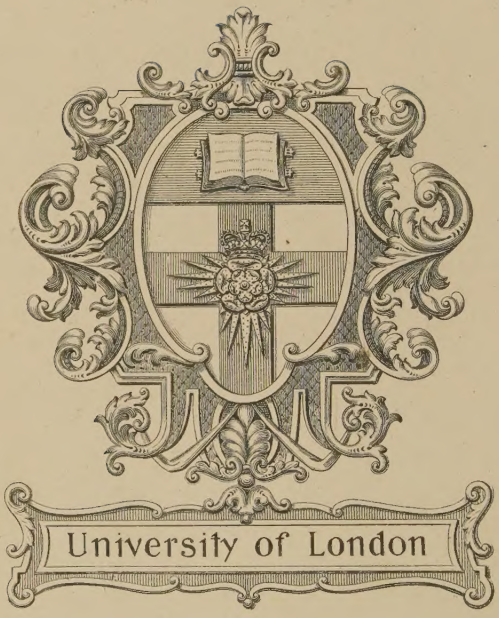

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REPORTS

FROM

COMMISSIONERS:

TWENTY-NINE VOLUMES.

—(14.)—

MILITARY EDUCATION—*continued.*

~~EDUCATION OF NAVAL OFFICERS.~~

Session

8 *February* —— 10 *August* 1870.

VOL. XXV.

REPORTS FROM COMMISSIONERS:

1870.

TWENTY-NINE VOLUMES:—CONTENTS OF THE

FOURTEENTH VOLUME.

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FOURTEENTH VOLUME.

N.B.—*THE* Figures *at the* beginning of the line, *correspond with the N° at the foot of each* Report; *and the* Figures *at the* end of the line, *refer to the* MS. Paging *of the Volumes arranged for The House of Commons.*

MILITARY EDUCATION—*continued.*

COUNCIL OF MILITARY EDUCATION:

[c.131.] Sixth Report by the Council of Military Education on Army Schools, Libraries, and Recreation Rooms - - - - p. 1

MILITARY EDUCATION IN FRANCE, &c.:

[c. 47.] Account of the Systems of Military Education in France, Prussia, Austria, Bavaria, and the United States - - - - 223

EDUCATION OF NAVAL OFFICERS: FOLIO

* [c. 203.] Report of the Committee on the Higher Education of Naval Officers; with Minutes of Evidence, and Appendix - - 835

* This paper, being of folio size, will be found in the Volume lettered "Vol XIX. XX. XXV folio portion."

SIXTH REPORT

BY THE

COUNCIL OF MILITARY EDUCATION

ON

ARMY SCHOOLS, LIBRARIES, AND RECREATION ROOMS.

Presented to both Houses of Parliament by Command of Her Majesty.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.
FOR HER MAJESTY'S STATIONERY OFFICE.

1870.

[C. 131.] *Price 1s. 2d.*

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SIXTH REPORT

BY THE

COUNCIL OF MILITARY EDUCATION

ON

ARMY SCHOOLS, LIBRARIES, AND RECREATION ROOMS.

THE Council of Military Education have the honour to submit to His Royal Highness the Field Marshal Commanding-in-Chief, and to the Right Honorable the Secretary of State for War, their Report on Army Schools, Libraries, and Recreation Rooms, for the years 1868 and 1869.

I.

SCHOOLMASTERS.

On the 31st December 1869, the establishment of Schoolmasters stood thus:—

Under the New Regulations as to Pay, Pension and Promotion.

Superintending Schoolmasters - -	12
Army Schoolmasters - - -	217

Under the Old Regulations.

1st class Schoolmasters - - -	11
2nd „ „ - - -	29
3rd „ „ - - -	1
Total - -	270

I. Schoolmasters.

As on the 31st March 1868 the establishment consisted of 259, there has been an increase of 11 schoolmasters.

There were also on the 31st December 1869 the following persons, who may be considered as being under training for the office of army schoolmaster, viz. :—

Students in the Normal and Model Schools at Chelsea - - - -	11
Pupil-teachers in the above and in the Royal Hibernian Schools - - -	25
Total - -	36

The casualties among the schoolmasters have been 21 in number, viz. :—

By discharge - - - -	11
By death - - - -	10

while the ranks have been recruited by 32 trained schoolmasters from the Royal Military Asylum.

The supply of candidates for the post of army schoolmaster appears to be adequate to the wants of the service.

Two-thirds of the students admitted during 1868 and 1869 to the Normal School at the Royal Military Asylum for the purpose of being trained, have been soldiers, while of those admitted as pupil teachers during the same period, three-fourths have been civilians.

Colonel Gleig reports favourably of the schoolmasters, as to their attention to their duties, as well as to their general good conduct, and the useful influence they exercise.

Mr. Vicars says that the conduct of the schoolmasters in Ireland is such as merits his warm approval and commendation.

Colonel Bellairs reports that the schoolmasters at Gibraltar have conducted themselves creditably, and that their commanding officers speak favourably of them.

Colonel McCrea speaks of the schoolmasters at Malta as a zealous, pains-taking class of men, very anxious to see their pupils take a high standard in the examinations.

Captain Dunn states that their conduct in Bengal has been all that could be desired.

II.

Schoolmistresses.

The establishment of schoolmistresses on the 31st December 1869 stood as follows:—

Trained Schoolmistresses.

Special - - - -	2
1st class - - - -	20
2nd class - - - -	41
3rd class - - - -	145
Total - - -	208

Besides the above there were—

Pupil-teachers and assistant schoolmistresses - - - -	39
Monitresses - - - -	162
Acting and detachment schoolmisstresses	76
Total - - -	277

Making a total of 485 persons engaged in conducting the infant and industrial schools of the army.

The inspectors and superintendents of army schools speak in favourable terms of the conduct and ability of the schoolmistresses as a body.

Colonel Gleig says that he has no reason to vary the favourable report which he has hitherto felt justified in making of the schoolmistresses, but he again calls attention to the disposition shown by many of them to entrust the giving of collective lessons to their monitresses. This practice is undoubtedly very objectionable, and the Council hope that commanding officers will discourage it as much as possible, and that superintending schoolmasters will, at their examinations, check all such irregularities if they still exist. Unless the schoolmistress is unavoidably absent, the monitress should attend solely to the class lessons, and to preserving order among the younger children; and the same remark applies in a great measure to pupil teachers, who may teach the more advanced children, but who should never be allowed to give collective lessons when a trained schoolmistress is present.

The difficulty of providing efficient pupil-teachers and monitresses in India is complained of, but it arises from local causes, and the Council are unable to suggest any means of supplying a defect which operates very injuriously upon the

II. Schoolmistresses.

education of soldiers' children in that country. Captain Dunn states that although the employment of pupil teachers had been sanctioned by the local government, no candidates had come forward, as the rate of pay allowed for the first year was only that which is drawn by a monitress.

III.

Inspection of Schools.

III. Inspection of Schools.

In April 1869 Mr. J. P. Sargeaunt was removed from the position of Assistant Inspector, and in the month of July Colonel Gleig was appointed Inspector of Army Schools in Great Britain; Mr. E. A. Vicars continuing to inspect the schools in Ireland.

The schools in Great Britain number about—

Adults - - - -	112
Grown children - - -	116
Infant and Industrial - -	90

The following superintending schoolmasters are posted to the various stations:—

Superintending Schoolmaster J. Belling, Aldershot.
" " C. Carnegie, do.
" " J. Grant, Woolwich.
" " T. Earp, London.
" " J. Stewart, Dover.
" " R. Kirk, Portsmouth.
" " W. Savage, Devonport.
" " W. Thacker, Manchester.
" " J. Little, Edinburgh.

The schools in Ireland numbered, on the 31st December 1869:—

Adults - - - -	36
Grown children - - -	35
Infant and Industrial - - -	35

Two superintending schoolmasters are posted to this district, viz.:—

Superintending Schoolmaster J. Newsom, Dublin.
" " G. Robertson, Curragh.

Each of the above schools is examined at least once a year by the Inspector, or by one of the superintending schoolmasters; and when the former does not examine, he inspects the school which has been examined by the superintending schoolmaster.

Local inspectors of schools are appointed to Malta and Gibraltar. They are selected from the officers of the garrison, their inspectional charge of the schools being additional

III. Inspection of Schools.

to their staff or regimental duties. The salary is 3*s.* a day. The present inspectors are—

Bt. Lieut. Colonel W. Bellairs, Assistant Adjutant-General, Gibraltar.

Lieut. Colonel McCrea, R.A., Malta.

In the dominion of Canada, Superintending Schoolmaster Stockham is specially appointed to the station of Toronto; but has been employed occasionally at the requisition of the Council of Military Education in visiting other Military schools in the provinces.

It will be seen from the above, that the number of superintending schoolmasters has been raised to 12 since the date of the Council's last Report. One of the officers newly appointed has been posted to Aldershot, and has relieved Mr. Belling of a portion of his too onerous duties at that camp. Another has been posted to the London district, and by the recall of Mr. Little from Canada, the Council have been enabled to appoint a superintending schoolmaster to Manchester.

No progress whatever has apparently been made towards amalgamating the Indian and Home establishments, nor have the Council any reason to think that the scheme they submitted on the 5th June 1863, has been passed by the Indian Government.

The superintendence of the schools of the Bengal Presidency, including the north-west provinces and the Punjab, still devolves upon Captain Dunn.* In Madras Lt. Colonel Laurie has been succeeded by Major Grove, and the schools of the Bombay Presidency have been inspected by Mr. W. Clifford since 1868, when Lt. Jacob obtained leave of absence. The Council have received no annual report from Mr. Clifford. Those of the superintendents of schools in the Bengal and Madras Presidencies will be found in Appendix II.

By the new arrangement referred to at the head of this section, the duty of examining the schools in Great Britain devolves upon the superintending schoolmasters, and the same system will ultimately be extended to Ireland. The inspector's duties are to visit every school in his district at least once a year, and to classify and recommend the award of certificates of education to non-commissioned officers and soldiers. On the receipt of applications from commanding officers, the inspector supplies the necessary questions for this purpose, naming at the same time the superintending schoolmaster to

* In Captain Dunn's report of the 29th October 1866, which was published in the Appendix to the Council's Fifth Report on Army Schools, it was stated, at p. 75 of that appendix, that the schoolmaster of the 7th Hussars was the only exception to his commendation of the schoolmasters in the Bengal Presidency. The regiment Captain Dunn intended to indicate was the 21st Hussars.

III. Inspection of Schools.

whom the candidates' answers are to be sent, and by whom they are to be examined before they are transmitted to the inspector.

Superintending schoolmasters may not examine any school more than once a year, except by special authority; they are not allowed to inspect detachment schools, and they must incur no expense in visiting out-stations without permission.

IV. State of Education in the Army.

IV.

State of Education in the Army.

The following table, showing the state of education in the army on the 1st January 1869, has been deduced from returns received from the Adjutant-General, of regiments and corps amounting to 168,712 men. The per-centage in the last column is taken from the Council's Report of 1868.

	Number returned.	Per-centage in 1869.	Per-centage in 1868.
Class 1. Who can neither read nor write.	15,207	9·00	9·46
„ 2. Who can read but not write.	15,263	9·04	10·59
„ 3. Who can read and write.	127,959	75·84	73·80
„ 4. Who have a superior degree of education.	10,283	6·09	6·14

This return does not include nine battalions of infantry and two regiments of cavalry, from which no returns have as yet been received.

The following table shows the proportion of "uneducated" among the several branches of the service, comprising under that term Classes 1 and 2 of the above table. The per-centages in the last six columns are taken from the Council's former Reports. The improvement is satisfactory.

Corps.	Classes 1 and 2, uneducated.						
	1868.	1867.	1866.	1865.	1864.	1860.	1858.
Cavalry	8·20	10·90	19·13	19·78	20·80	22·03	24·8
Royal Artillery	18·03	18·30	20·42	19·41	22·09	25·65	40·4
Royal Engineers	0·39	1·34	3·17	3·34	3·44	5·36	3·0
Military Train	23·44	24·37	24·30	38·62	35·06	42·37	32·6
Foot Guards	7·16	8·12	8·66	10·06	9·73	10·96	20·4
Infantry of the Line	21·01	23·54	33·99	35·71	36·40	45·62	44·6

Returns for 1868 have also been received from the Army Hospital Corps, the Commissariat Staff Corps, and the Military Store Staff Corps, showing that, except in the last

named where the per-centage is 4·06, there are no uneducated men in these departments. IV. State of Education in the Army.

A comparison of the per-centages of uneducated men, returned by Colonel (now Major-General) Lefroy in 1858, and by the Council in subsequent Reports, proves that in ten years the proportion of soldiers who can neither read nor write, or at the best can read without being able to write, has been reduced by fully one half.

The slow but steady progress which has been made since 1860 proves that the advance in elementary education is real.

V.

State of Education in the Adult Schools.

V. State of Education in Adult Schools.

A table showing the degrees of progress in the schools will be found in App. IV. The following is a summary of the reports sent in by the inspectors or superintending schoolmasters, and by regimental schoolmasters, respectively :—

		By Inspectors.	By Schoolmasters.	
Reading.	Learning to read	12·18	14·24	per cent.
	Easy Narratives	28·88	32·31	„
	Books of General Information	58·91	53·42	„
Writing.	Learning to write	30·44	31·36	„
	Dictation from Easy Narratives	35·79	36·54	„
	Do. from Books of general Information	33·77	32·10	„
Arithmetic.	Learning to Cipher	34·47	36·64	„
	Simple Rules	15·97	16·80	„
	Compound do.	18·79	17·42	„
	Reduction of Weights and Measures	14·39	13·34	„
	Proportion, Practice, and Mess Accounts	11·96	11·48	„
	Vulgar and Decimal Fractions	4·08	3·79	„
	Higher Rules	0·31	0·54	„

A comparison of these numbers with those given in former reports shows that some progress has been made, but it is not as great as might be desired.

Mr. Vicars supplies a very favourable report of the progress made in the schools in Ireland. He gives the following

V. State of Education in Adult Schools.

per-centages of those who have made progress, or "great progress," in the main subjects of instruction.

	1868.	1869.	Number of Men examined.
Writing - - -	68 per cent.	76 per cent.	1,281
Dictation - -	55 „	67 „	1,223
Arithmetic - -	58 „	74 „	1,283

The increase in the number of men who belong to the higher standards, however, as compared with the number returned in 1868, is not as great as might have been reasonably expected from Mr. Vicars' report of progress.

VI.

Attendance at Adult Schools.

VI. Attendance at Adult Schools.

The following is an abstract of the Table given in Appendix III. No. 2, showing the number of men on the school books, and the average number of attendances in 1869:—

Corps.	Number of Corps.	Non-Commissioned Officers and Men on the School Books.	Number of Attendances during the Year.	Average Number of Lessons per Man during the Year.
Cavalry and Military Train - -	34	2,567	184,835	72
Foot Guards and their Depôt - -	8	1,583	111,870	71
Infantry of the Line - - -	141	21,280	1,125,388	53
Depôt Battalions - - -	11	2,568	184,310	72
Artillery and their Depôts - -	38	5,550	334,256	61
Engineers - - - -	11	473	28,702	61
Colonial Corps - - - -	7	871	29,114	34
Miscellaneous - - - -	9	415	16,752	33
Total - -	259	35,307	2,015,227	

The irregularity of the attendance in the adult schools is still remarked upon by the inspectors, and the Council have little to add to their former observations on the subject. In many cases the duties are doubtless such as to render regular attendance at school impracticable, but in many also the attendance would be far more regular than it is if the instruction to be obtained were really valued by the men.

With respect to compulsory attendance there is much difference of opinion, and the following extracts from communications received by the Council deserve consideration in connexion with that subject.

VI. Attendance at Adult Schools.

Colonel Browne, commanding 2nd Battalion, 20th Regiment, writes from the Cape of Good Hope on the 3rd June 1869:—

"I have tried various arrangements at different times, and have now come to the conclusion that the soldier must be left wholly unfettered in respect to his education. I have dispensed as far as practicable with everything approaching to restrictions in the shape of parades of men or roll calls for school, and I have withdrawn all equivalents, or excusing men from other duties.

"I find as the result, a better general attendance and more real progress. The men feel that the school is open to them if they choose to go there, and that no other interest is consulted than their own benefit.

"I find that the desire to acquire the rudiments of education is by no means strong among soldiers, as a class.

"A few see the advantage and are glad of it, but the majority consider attendance at school as so much duty. I think, therefore, that it is of importance to remove everything that tends to give that impression.

"Indulgences, or, as I have called them, equivalents, do not generally answer. A large attendance may certainly be secured, but not a large number of 'students.'

The men look at it in this light, 'Is it less trouble to me to go to the afternoon parade or to sit in the schoolroom?'

"The schoolmasters are hampered with a number of men who are not really desirous of learning, and can give less attention to those who really desire improvement.

"I do not think that this advances education.

"Large attendances do not appear to me to be any real test of progress. I greatly prefer to see in the schools of my regiment moderate numbers of men who come freely and willingly, with a desire to improve themselves, and I find the number of these is increasing."

Captain Dunn, the Superintendent of Army Schools in Bengal, writes as follows:—

"The attendance of the great majority of adults, about 70 per cent. of the whole, continues to be compulsory. In three corps, the 20th Hussars, 1/6th, and 103rd regiments, the enforced attendance at school appeared to me to be carried to a point beyond which advantage could be expected. In the last-named regiment the system has been considerably modified since my visit. On the other hand, I would particularize the 7th Hussars as having a good attendance entirely voluntary."

It is most probable that a system which produces the best

VI. Attendance at Adult Schools.

result with one corps, would not do so with every other; that the success of the school of each regiment must be in a great measure dependent on the judgment of its commanding officer, and that no rigid regulation could yet be established. But the subject of army schools is now under the consideration of the Royal Commission on Military Education, and it is therefore unnecessary for the Council to allude any further in this report to the attendance of adults.

VII.

VII. Certificates of Education.

Certificates of Education.

A return of the certificates in possession of corps on the 31st December 1868 and 1869 respectively will be found in Appendix V., and the following table shows the number of certificates granted during the two years:—

	1st Class.	2nd Class.	3rd Class.	Total.
Colonel Gleig - -	20	472	2,023	2,515
Mr. Vicars - - -	129	372	475	976
*Colonel Bellairs, Gibraltar -	—	—	—	327
Colonel McCrea, Malta -	14	211	222	447
Superintending Schoolmasters in Canada - -	19	77	236	332
Superintendent, Bengal -	19	179	344	542
,, Madras -	56	64	148	268
,, Bombay -	No Returns received.			
Total -	257	1,375	3,448	5,407

* The Local Inspector of Schools at Gibraltar has not stated to what classes the certificates belonged which he awarded.

The total number of certificates of education in possession of non-commissioned officers and soldiers on the 31st December 1869 was—

1st class - - -	876
2nd class - - -	3,543
3rd class - - -	5,449
Total - - -	9,868

An important alteration in the manner of awarding certificates of education has been introduced since the date of the Council's last report on the schools. At p. xvi. of that report they remarked on the discrepancy between the awards of different inspectors, observing that it could hardly be accounted for by the varying conditions of preparation of the

candidates, but was probably due to differences in the style of examination papers, and in the mode of estimating the value of the answers.

When, in 1869, Colonel Gleig was appointed inspector for the whole of England and Scotland, the Council took the opportunity of placing all the examinations for certificates of education in the United Kingdom under his control, with a view to securing greater uniformity.

A General Order, No. 100, dated 1st October 1869, an abstract of which has been given in Section III., was subsequently issued, defining the duties of the inspector or assistant inspector, and of the superintending schoolmasters, especially with respect to the examination of candidates for certificates; and the Council then suggested that greater effect might be given to the new system by requiring that all such examinations should be held periodically. This recommendation was carried out, and a General Order, published on the 14th January 1870, fixes the months of February and March and of August and September as those in which alone examinations for certificates may be held, except under particular circumstances.

Colonel Gleig considers that these examinations are calculated to produce a beneficial effect upon the character of the instruction given in army schools, and that a spirit of emulation on this head is growing up among schoolmasters as well as among their pupils.

This feeling may, however, render it necessary to guard against the danger of schoolmasters devoting their time and attention to those pupils who are most likely to do them credit in this respect, and neglecting those who have no prospect of obtaining certificates, but whose ignorance of all but the rudiments of reading and writing calls for the most patient attention on the part of their teachers.

Colonel Gleig states in his report on the year 1868 that a large proportion of those who obtained third-class certificates were possessed of qualifications greatly in advance of the standard indicated thereby, a result which must be considered as proof of the value of these certificates in encouraging the men to study.

The Council have always attached importance to their use as affording at once an incentive to improvement, and a measure of the educational condition of regiments. It was naturally supposed that the possession of one or other of these certificates would in time be regarded as a recommendation, if not a necessary qualification, for promotion to the different grades among the non-commissioned officers, and partially this has become the case. But the difference between the educational condition of the men of different regiments is

IX. Elementary Examinations at Aldershot.

three of them gaining two prizes each, and five others one prize each.

Superintending schoolmaster Belling, in reporting this circumstance, observes that when it is taken into consideration that these candidates had to compete with others from various schools in the Aldershot and Farnham district, and that the only boy from a non-military school who gained a prize had received the principal part of his education in a regimental school, a remarkable illustration is afforded of the success of elementary teaching in the army schools at that station; proving that wherever army schoolmasters perform their duties in a faithful and energetic manner, their schools can successfully compete with schools of the same class in civil life, although the latter profess to have a much higher standard.

In 1869 nine soldiers and 52 children were examined. Thirty-seven of these gained certificates, and two girls obtained prizes for needlework without certificates.

Twenty-four prizes, amounting to 6*l.* 11*s.* 6*d.*, were awarded to the candidates who stood first and second on the list in each subject of examination.

In addition to the above, six non-commissioned officers and men entered their names for the "final examination," by the Society of Arts, and each of them obtained a certificate for the subject in which he was examined.

Mr. Belling states that the committee of ladies, unconnected with the army, who were appointed by the local board of education to examine the girls' needlework, reported that the work done in their presence by the soldiers' children was superior to what they had been accustomed to see in civil life.

The following extract from the Report of the Honorary Secretary to the Local Board of Education at Aldershot is appended to Mr. Belling's Report:—"The results of the "elementary and final examinations lately held under this "Board have just been published by the committee and the "Society of Arts. They show that the number of candidates "this year has been greater than on any former occasion; "and since the proportion of passes to failures is about the "same as usual, the number of persons gaining certificates "is large beyond example. This fact is the more interesting, "because the mass of the examinees consisted of soldiers "and boys from the camp schools; and while the amount of "success bears strong testimony to the efficiency of these "schools, it also says very much for the habits and character "of the soldiers who entered. Some of these took the "'final' papers of the Society of Arts, and have gained

" even first and second-class certificates; and if the searching " nature of the examination is considered, the intellectual " status of the men would seem to be very superior." IX. Elementary Examinations at Aldershot.

Colonel Gleig observes that these results fairly illustrate the relative efficiency of the army schools, and of those in a corresponding grade in civil life, and induce him to believe that the former are not only, as a body, not inferior to the latter, but that the majority of them are of a character superior to that of the best civil schools of similar grade, whether adults', grown children's, or industrial schools are considered.

X.

Children's Schools.

X. Children's Schools.

In 1869 the average number of children attending army schools was as follows:—

Boys	-	5,260
Girls	-	4,099
Total	-	9,359

showing an increase of 785 on the numbers given in the Council's last report.

In addition to the above, there were in the infant schools—

Boys	-	5,492
Girls	-	5,922
Total	-	11,414

being 963 more than in September 1867.

In the industrial schools the numbers had increased to 11,772.

Colonel Gleig has reason to believe that cases have occurred of schoolmistresses working up the industrial school materials themselves, out of school hours, in order to have the clothing ready for distribution on a particular day long antecedent to the end of the financial year, when the new supplies would become due. The Council invite the attention of commanding officers to this irregularity. The object of providing school materials at the public expense is to teach the children to make up clothes themselves under the guidance of the schoolmistress.

Instruction in cutting out clothes is said to be still neglected in some of the schools.

X. Children's School.

The children are reported to be generally clean and tidy The greater regularity of their attendance at school, as compared with that of the adults, is naturally attended with more satisfactory results.

In the 64th Regiment, at Malta, and, it is believed, in some other corps, the boys are regularly drilled by the schoolmaster, a practice which cannot fail to be productive of great advantage to the children.

XI.

XI. Religious Instruction.

Religious Instruction.

Religious instruction continues to be imparted in the schools by the ministers of the various denominations on two days in each week. The schoolmasters and schoolmistresses, with their assistants, are always required to be present, and to afford assistance to the clergymen of their respective persuasions. No secular instruction is carried on at the same time.

The schools are opened daily with prayer, and the schoolmaster then proceeds to give a Bible lesson, in selecting the subject for which he is generally guided by the instructions of the chaplain.

The children who belong to denominations other than that of the schoolmaster, are not required to attend until 9.30, when the general instruction of the school commences.

The difficulty of providing religious instruction for children of various persuasions appears to be met, as far as possible, by the present system.

XII.

XII. Royal Military Asylum, Chelsea.

Royal Military Asylum, Chelsea.

Normal School.

On the 31st December 1869 the Normal School contained 11 students, of whom nine were soldiers, besides eight pupil teachers, of whom two only were soldiers.

The following were admitted by competitive examination during the two years under report :—

Students	Non-commissioned officers and soldiers	16
	Civilians - - - -	8
Pupil Teachers	Non-commissioned officers and soldiers	2
	Civilians - - - -	6
	Total - - -	32

The results of the several examinations held in the first division of the Normal School to test the students' fitness for removal to the Model School will be found in Appendix VIII., No. 1.

The number of students in the Normal School having decreased considerably of late, the Council have been enabled to recommend that the services of the assistant master be dispensed with from the 1st April 1870.

Model Schools.

The authorized number of boys is 500, but the number actually present on the 31st December 1868 was only 474, and on the 31st December 1869 it had fallen to 457.

Their ages were as follows:—

	1868.	1869.
From 6 to 7 years - -	16	1
„ 7 to 8 „ - -	28	27
„ 8 to 9 „ - -	55	40
„ 9 to 10 „ - -	59	66
„ 10 to 11 „ - -	58	68
„ 11 to 12 „ - -	99	64
„ 12 to 13 „ - -	85	101
„ 13 to 14 „ - -	55	78
„ 14 to 15 „ - -	18	11
„ 15 to 16 „ - -	1	0
„ 16 to 17 „ - -	0	1
Total - - -	474	457

The following return shows the number of boys among the seniors who were instructed in a trade or in music:—

	1868.	1869.
Musicians - -	91	83
Drummers and fifers -	58	73
Tailors - - -	39	83
Shoemakers - -	46	75

XII. Royal Military Asylum, Chelsea.

The state of education in the school generally, may be judged of from the following list of subjects taught, and the number of boys receiving instruction in each :—

Subjects taught in the Model Schools.	Numbers under Instruction.
Religious knowledge	457
Reading	457
Writing on slates	457
Writing in copy books	435
Writing from dictation	435
Composition, exercises in	285
Arithmetic, on slates	457
Arithmetic, mental	457
Geography	343
English grammar	343
English history	343
Object lessons	369
Vocal music	313
Euclid	32
Mensuration	32
Natural history	88
Model drawing	60
Analysis of sentences, &c.	88
Poetry—Learning :	
(1.) Milton's Paradise Lost, Book I.	32
(2.) Goldsmith's Deserted Village	28
(3.) Miscellaneous pieces	173

Lectures on history, geography, natural history, manners and customs of various nations, and other subjects, are given in connexion with magic lantern exhibitions once a week during the winter season to all the boys in rotation.

During the two years under report 149 boys were discharged from the establishment, of whom 121 appear from the following return to have enlisted in the army, and 14 others who were reported to be fit for enlistment, returned to their friends. Only nine per cent. of the boys discharged were considered unfit for the army, a proportion less by one half than that given in the Council's last report.

The number of boys who have been discharged on completing their time since, 31st December 1867, was :

XII. Royal Military Asylum, Chelsea.

Years.	Average Strength.	Number of Boys whose Time expired.			Number of Boys reported fit for the Army.	
		Fit for the Army.	Unfit.	Total.	Enlisted.	Delivered to their Friends.
1868	490	78	10	88	69	9
1869	457	57	4	61	52	5

The following table, compiled from the annual reports of regiments, shows the number of individuals serving in the army in the years 1868 and 1869 who had been educated at the Royal Military Asylum.

It must be observed, however, that the returns for 1869 are very incomplete, those of the Royal Artillery, Royal Engineers, and several other corps not having been received.

Rank.	1868.	1869.	Character.	1868.	1869.
Officers - -	1	—	Exemplary - -	4	1
Staff Serjeants and Serjeants - -	45	24	Very good and good	567	366
Band Masters - -	3	2	Indifferent - -	30	17
Drum and Trumpet Majors - - -	14	9	Bad - - -	8	8
Corporals and Bombardiers - -	82	34	Very bad - -	—	3
Drummers and Trumpeters - - -	144	79			
Privates - - -	320	247			
Total - -	609	395	Total - -	609	395

It is satisfactory to observe that a very small proportion of the men who have thus been educated at the Royal Military Asylum, bear a bad character in the army.

The Rev. Canon Moseley has made a very full report upon the boy's school, which he has carefully examined twice since the date of the Council's last report. His report, which will be found in Appendix VIII., No. 2, shows that the pupils are extremely well taught and answer arithmetical questions with great ease and correctness. Their writing from dictation is also remarkably free from mistakes, but Canon Moseley considers that their penmanship is inferior to what he has seen on former occasions.

The masters of the Model and Normal schools are, in Canon Moseley's opinion, deserving of great praise for the manner in which their pupils are instructed, whether

XII. Royal Military Asylum, Chelsea.

these are students under training for the appointment of army schoolmaster, or boys varying from 5 to 15 years of age.

XIII.

XIII. Royal Hibernian Military School.

Royal Hibernian Military School.

During the last two years the school has on an average consisted of 410 boys, whose ages, taken on the 31st December of each year, were as follows :—

	1868.	1869.
Under 8 years	9	7
From 8 to 9 years	48	27
„ 9 to 10 „	54	67
„ 10 to 11 „	80	71
„ 11 to 12 „	71	75
„ 12 to 13 „	70	82
„ 13 to 14 „	67	63
„ 14 to 15 „	7	7
„ 15 to 16 „	1	2
Appointed, but not joined	3	9
Total	410	410

The following return shows the educational condition of the school on the 31st December of each year :—

	1868.	1869.
Learning to read	407	401
Writing on slates	64	53
„ on paper	343	348
„ from dictation	275	272
Preliminary exercises in dictation on slates	132	129
Arithmetic, on slates	407	401
Arithmetic, mental	275	272
Algebra	25	28
Mensuration	25	28
Elementary exercises in mechanics	25	28
Geography	407	401
English history	407	401
„ grammar	275	272
Etymology and derivation	62	64
Analysis of sentences	38	46
Drawing	275	272
Sacred history	407	401
Vocal music	297	294

XIII Royal Hibernian Military School.

The boys who are being trained as musicians, or who are learning the trade of carpenter, tailor, or shoemaker, were distributed in the following manner at the end of each year under report:—

	1868.	1869.
Musicians	27	30
In training for musicians	31	17
Drummers and fifers	40	40
Buglers and trumpeters	32	32
In training for do.	7	7
Shoemakers	40	40
Tailors	112	112
Carpenters	8	8
Total	297	286

It appears from the following return, that of 152 boys whose time at the Royal Hibernian Military School expired during the last two years, all but two were reported to be fit for the army, and that 121 were actually enlisted; of the remainder, nine became monitors in the school, and 20 returned to their friends:—

Years.	Average Strength.	Number of Boys whose Time expired.			Distribution of Boys reported fit for the Army.			Distribution of Boys found unfit for the Army.	
		Reported fit for the Army.	Reported unfit.	Total.	Enlisted for the Army.	Remained as Monitors.	Delivered to their Friends.	Apprenticed to Trades.	Returned to their Friends.
1868 and 1869	410	150	2	152	121	9	20	—	2

A very satisfactory return is given below of the number of those who, having entered the army from the Royal Hibernian Military School, have attained to commissioned or non-commissioned rank, and of the good character borne by 93 per cent. of all ranks.

XIII. Royal Hibernian Military School.

ABSTRACT of the Number of Boys formerly in the School who were serving in the Army on 1st January 1870.

Rank.	Number in each Rank.	Character.	Number in each Rank.
Officers	9	Exemplary	14
Serjeants-major	2		
Enlisted schoolmasters	21	Very good	291
Bandmasters	10		
Quartermaster-serjeants	7	Good	614
Staff serjeant instructor of musketry	1	Indifferent	44
Staff serjeant instructor of gymnastics	1	Bad	11
Colour-serjeants	15		
Colour-serjeants, paymasters' clerks	3	Very bad	9
Colour-serjeant, acting serjeant-major	1		
Colour-serjeants, staff clerks	3		
Trumpet and drum-majors	12		
Serjeants of regimental bands	10		
Serjeant clerks at Horse Guards	4		
Serjeant clerk to officer commanding R.E. Canada	1		
Serjeant orderly room clerk	1		
Hospital serjeant	1		
Serjeants at regimental duty	37		
Bombardiers	13		
Lance-serjeants	8		
Corporals	56		
Lance corporals	35		
Musicians in regimental bands	282		
Trumpeters, buglers, drummers, and boys	292		
Gunners, sappers, and privates in the ranks	158		
Total	983	Total	983

The Commandant has drawn the Council's attention to the following errors in their last report on army schools.

The second return given on p. xxvii. of the Council's fifth report was for 1868, not 1866.

The second return on the following page was intended to include both the years 1867 and 1868.

The report on the examination of the school for "Crimean Banquet Prizes," which was printed in Appendix VI., should have been dated December 1867, not 1866.

XIV.

Lectures.

Upwards of 2,000 lectures, readings, &c. took place during the winter season 1868–9, many of which were of a more or less scientific character.

Army chaplains, officers, and schoolmasters appear to unite in affording instruction and amusement to the men; and, although some of the magic lantern slides are of a comic and even childish nature, the Council cannot but think that these entertainments effect much good during the long winter evenings, when soldiers are more than ever tempted to frequent public houses.

Additional sets of slides have been supplied to various stations at home and abroad, and a set of apparatus for frictional electricity is lent to garrisons where schoolmasters or others are desirous of delivering experimental lectures.

A report by Mr. McLeod, head master of the model school, Royal Military Asylum, on the season of 1868–9, will be found in Appendix IX.

Captain Dunn states that not much has been done in Bengal as regards lectures, the five magic lanterns in that Presidency having been found insufficient to enable the circulation to be effected with the rapidity necessary to afford all the stations an opportunity of profiting by them.

A supply of seven additional lanterns, with a large number of slides and diagrams, and all the necessary materials was, however, sanctioned by the Secretary of State for India early in 1869, and sent out in the autumn of that year.

XV.

Garrison Libraries.

In Appendix X. will be found a list of the garrison libraries existing on the 31st March 1869.

The total number of volumes on the 31st December 1869 was 223,345. During the year and nine months from March 1868 to that time 13,148 volumes have been lost or condemned, 25,215 have been added, and 8,787 repaired. The number in circulation on the 31st March 1869 was 514,461 against 373,895 in preceding year.

The amount of contributions from recreation room funds and officers' subscriptions up to 31st December 1869 was 4,488*l.* 9*s.* 7*d.*, including librarians' salaries.

There is no doubt that the benefit to be derived from the libraries is constantly becoming more widely appreciated by the troops.

XV. Garrison Libraries.

In accordance with the suggestions of Colonel Gleig, respecting the want of due means for preserving the books, the Council have drawn up a rule on the subject, which has been embodied in a General Order, by the observance of which they expect that the defect pointed out will be remedied.

It still appears to them very expedient, for reasons stated in their last report, that a larger allowance than 10*l.* should be granted in the case of very small libraries on first establishment, as well as a larger quarterly allowance in proportion to the number of troops. These libraries are generally established in small towns where it is especially desirable to afford amusement of this kind to the troops, and the allowance granted has proved insufficient for their maintenance though quite adequate in the case of larger stations.

The inadequacy of the allowance granted to field batteries of artillery and to engineer troops has also been represented, though hitherto without success. The field battery is more than twice as strong as an ordinary company; and each of the two sections of an engineer troop consists on the average of 97 men, yet the battery and the engineer troop receive each the same allowance only as the company of infantry or troop of cavalry. The Council recommended that the battery should receive the allowances of two companies, and each section of the engineer troop, and also the depôt, the allowance of one company.

XVI.

Regimental Recreation Rooms.

XVI. Regimental Recreation Rooms.

A list of the regimental recreation rooms in existence on the 31st March 1869 will be found in Appendix XI.

The number of recreation rooms had then increased to 218, one half of which consisted of two apartments. The number of refreshment bars had also slightly increased, and an addition of 5,000 subscribers had been received, raising the total amount of subscriptions to 6,346*l.* 1*s.* 7*d.*

The sum of 2,221*l.* 15*s.* 4*d.* was contributed from the recreation room funds to garrison libraries during the year.

The good effect upon the army of the introduction of regimental recreation rooms is universally acknowledged. Colonel Gleig considers them one of the most useful products of the modern army school system out of which they directly sprang, and states that they are still much in favour, both with officers and men, wherever suitable accommodation has been provided.

In a communication received from the officer commanding

2nd Battalion, 20th Regiment, to which allusion has already been made, it is stated by that officer that, in his opinion, the reading and recreation rooms have a powerful influence in inducing men to avail themselves of the regimental schools. He adds, "I cannot express myself too strongly in favour "of all that gives relaxation to the soldier within his barrack, "and tends to make it a respectable and comfortable home. "The number of men who pass their evenings in the recrea- "tion rooms, or in reading a book in their barracks, instead "of in public-houses, increases steadily, and is a source of "much gratification." XVI. Regimental Recreation Rooms.

In concluding the last report which the Council of Military Education will be called upon to draw up, they venture to submit to His Royal Highness the Field Marshal Commanding-in-Chief, and to the Secretary of State for War, that considerable progress has been made in the army school system since it was placed under their superintendence in March 1860.

The proportion of uneducated men in the army, *i.e.*, of those who can neither read nor write, or who can read but not write, has been reduced by one-half; special classes and certificates of education have produced in almost every corps a small body of non-commissioned officers and privates possessed of an amount of useful knowledge which qualifies them for the duties of the higher grades; the number of trained schoolmasters has increased from 191 to 270; the number of children under instruction has increased 70 per cent.; and the number of volumes in garrison libraries is 48 per cent. greater than it was at the time of the Council's first report.

The Council consider that the system has on the whole progressed satisfactorily, and that the army has benefited in no small degree by the means of improvement provided for it.

(Signed) Wm. Napier, Major-General, Vice-President.
H. D. Harness, Colonel.
Henry Moseley.
E. H. F. Pocklington, Colonel.
E. B. Hamley, Colonel.

13, Great George Street, S.W.
31st March 1870.

APPENDIX.

Appendix I.

Alphabetical List of Army Schoolmasters.

Class.	Name.	Class.	Name.
Army	Abbott, J. S.	Army	Burns, J.
Army	Abbott, W.	Army	Burton, T. W.
2	Alderton, F.		
Army	Aldwell, W. B.	Army	Capon, A. R.
2	Allen, B. C.	Army	Carr, M.
Army	Anderson, T.	2	Carroll, J.
Army	Annett, E. J.	Army	Carson, T.
Army	Annett, G. L.	Army	Carthew, E.
Army	Armstrong, R.	2	Cartwright, J.
Army	Arthur, W. M.	2	Chambers, J.
Army	Assan.	2	Clarke, C.
Army	Astbury, J.	Army	Clarke, P. H. T.
Army	Atkinson, C.	1	Clift, C. W.
3	Atwell, A. H.	Army	Cochrane, H.
		Army	Colquhoun, W.
		Army	Comerford, J.
Army	Bacon, E.	Army	Compton, J. B.
Army	Bacon, W.	Army	Coo, C. S.
Army	Baillie, A. J.	Army	Cooper, A.
Army	Barnes, A.	2	Curtis, G. E.
Army	Bartram, W.		
Army	Baskerville, R. C.		
Army	Bass, J.	Army	Davidson, J.
Army	Baston, E.	Army	Davies, J.
Army	Bateman, R.	Army	Davison, T.
Army	Bell, R.	2	Devereux, A.
Army	Belling, R.	Army	De Winter, J.
Army	Berresford, J.	Army	Docherty, T.
Army	Bingham, J.	Army	Dorman, Isaac.
1	Bird, W. H.	Army	Douthett, A.
Army	Black, M. A.	Army	Dunnett, G. L.
Army	Blake, C.	2	Dunn, F. W.
Army	Boland, J.		
2	Bolus, F.	Army	Edmond, A. W.
Army	Boughton, G. H.	Army	Eldridge, J. B.
Army	Bradbury, F.	Army	Etler, C.
Army	Bramhall, E.	Army	Ewart, P.
Army	Brown, J.		
Army	Brown, J. A.		
Army	Browne, F. W.	Army	Fenton, G.
Army	Bryan, W.	Army	Fleming, C. M.
Army	Burgham, J. A.	Army	Fletcher, C.

APP. I.

No. 1.

Class.	Name.
Army	Flinter, T.
Army	Flood, H.
Army	Flood, John.
Army	Fodringham, W. N.
Army	Forde, J. F.
Army	Foster, J. H.
2	Fowler, C. B.
Army	French, J. W.
Army	Fryer, W.
2	Gell, W.
Army	Gilbert, J. A.
1	Giles, E.
Army	Gillmore, J. W.
Army	Gilmore, J. M.
Army	Gilmore, James.
2	Goadby, S. H.
Army	Goodwin, W.
Army	Gooding, R.
Army	Gooding, W.
2	Grant, J.
Army	Green, G.
Army	Gunn, J. R.
Army	Halfpenny, W.
Army	Hall, W. R.
Army	Hamilton, G. B.
Army	Hanley, W.
Army	Harris, J. J.
Army	Hawkins, W.
Army	Haydod, C.
Army	Hayes, J. J.
Army	Hazard, J.
Army	Hebb, H. H.
Army	Henry, J.
2	Hickling, J. S.
Army	Hicks, C.
Army	Hildyard, G. E.
Army	Hill, W. J.
Army	Hobbs, J.
Army	Holland, G.
Army	Holloway, J.
Army	Holmes, W.
Army	Hopkins, J.
Army	Howard, S.
Army	Irwin, W.
Army	James, J.
Army,	James, T. W.
Army	Jerram, H.
Army	Jesse, H.
Army	Jones, T. W.
Army	Jupp, W. H.
Army	Kavanagh, J. J.
Army	Kearns, J. W.
2	Keley, H.
Army	Kenny, R. T.
Army	Kidd, J.
Army	King, D. R.
Army	Lacey, J.
Army	Langford, W.
Army	Leckey, J. S.
Army	Le Mar, W.
Army	Loftus, M.
Army	Lonsdale, J.
1	Lowman, E.
Army	Lowry, F.
Army	Lynch, T.
Army	Macartney, E. K.
Army	Mahoney, J.
Army	Major, F. J.
Army	Mallandain, C.
Army	Marshall, J.
Army	Marshall, C.
Army	Masterson, J.
Army	Matthews, L.
Army	M'Ardle, J.
Army	M'Caskery, G.
Army	M'Cormick, J.
Army	M'Elwee, A.
Army	M'Enroe, C. S.
2	M'Ewen, W.
Army	M'Governe, R. W.
2	M'Ilherron, D.
1	M'Kay, D.
1	M'Kinder, W. M.
Army	M'Lachlan, W.
Army	M'Lean, James H.
Army	M'Lean, J. W.
2	M'Lean, R.
Army	M'Mahon, A.
Army	M'Mahon, T.
Army	Mills, P.
Army	Minnion, W.
Army	Moore, J.
2	Moran, J.
Army	Morrison, D.
Army	Mulvihill, P.
Army	Munro, W.
Army	Murray, J. H.
Army	Murray, A. W.
Army	Myatt, C. W.
Army	Myles, W. E.
Army	Naylor, C.
Army	Northway, J.
Army	Ogg, G.
Army	Ovens, H.
Army	Palmer, R.
Army	Pardy, T.

Class.	Name.
Army	Parr, H.
1	Parsons, A.
Army	Payne, W.
Army	Pell, R.
Army	Perkins, J. C.
Army	Pither, J. R.
Army	Pither, R. G.
Army	Polden, T.
Army	Pollard, J.
Army	Porter, J. H.
Army	Porter, John.
Army	Pratt, G.
2	Purdon, S.
Army	Raymer, R.
Army	Read, W.
Army	Redman, W.
Army	Reilly, James.
Army	Reilly, J. C.
Army	Revell, N.
2	Rice, G. T.
2	Richardson, W.
Army	Rix, W.
2	Robertson, A.
2	Robinson, W.
1	Rogers, E. H.
Army	Ruggles, G.
2	Runcieman, A.
Army	Rutherford, R.
Army	Scarlett, T. H.
Army	Scholvein, G.
Army	Sessford, J. R.
Army	Shannon, W.
Army	Shaw, G.
Army	Sheffield, T.
Army	Shields, J.
Army	Shields, W.
Army	Ship, S.
2	Shipman, E.
Army	Short, T.
Army	Smears, J. A.
Army	Smith, T. W.
Army	Spiller, T.
Army	Splane, J.
Army	Spong, G.
Army	Sproat, C. S.
1	Stanton, C.
1	Stapley, R. C.
Army	Stevenson, W. C. C.
Army	Stubbs, W. H.
2	Tapsell, J.
1	Thompson, A. A.
Army	Thompson, G.
Army	Treacy, M.
Army	Venn, G.
Army	Venner, H.
2	Walker, T.
Army	Ward, F. K.
Army	Waters, R.
Army	Weller, W.
Army	Wells, J.
Army	Wheeler, W.
Army	Whitaker, F.
Army	White, B.
Army	Wicks, T.
Army	Willsher, J.
Army	Wilson, Alfred.
Army	Wilson, Chas. M.
Army	Wilson, Chas. S.
Army	Wilson, William.
Army	Williams, H. B.
Army	Winter, W.
Army	Wonnacott, W.
Army	Wright, C.
Army	Wroughton, J.
Army	Yelf, E.
Army	Young, G.

App. II.
No. 1.

Appendix II.—No. 1.

Report by Colonel Gleig for 1868.

Sir, January 31, 1869.

In accordance with the instructions to assistant inspectors of Army Schools, I have the honour to present the usual annual report for the information of the Council of Military Education.

The results of my periodical examinations and inspections have been reported to the Council of Military Education from time to time as they were made. I have now to lay before them a return of examinations for certificates, held throughout the year 1868 in my district of inspection, the results of which it would not have been in accordance with the established custom to report at the time they were made. [Return annexed.]

The experience of each succeeding year tends to confirm me in the opinion which I expressed when these examinations were first instituted, that they are calculated to produce a most beneficial effect upon the character of the instruction given in our adult schools, and to make it both more precise and more thorough than, as a rule, it once was. I am very glad to say that some of our most experienced schoolmasters have expressed to me their entire concurrence in this opinion, though several of them have at the same time recommended some modifications of the system of examination, or of the wording of the certificates, or of both. To these suggestions, received from persons so well qualified to offer useful advice upon the subject, I have not failed to give the fullest consideration; and if effectual means should ever be devised by which to ensure some approach to uniformity of principle in determining the respective merits of candidates examined for certificates, I should be disposed to recommend strongly to the notice of the Council of Military Education some of the modifications of the existing arrangements which have been proposed to me. But it seems to be beyond doubt that great variety of practice exists at present, among those who are authorized to examine and recommend for school certificates, in deciding upon the qualifications of the candidates; and therefore I do not deem it to be of importance that I should press any change except that which has already been urged upon the Council of Military Education by others as well as by myself, namely, the introduction of an intermediate certificate between the first and second classes, to be called a "superior second-class certificate," and to be granted to men who may qualify for first-class certificates in reading, writing to dication, and arithmetic, but not in two additional subjects.

The increase observable in each succeeding year in the number of men that present themselves at the examination for school certificates affords, I think, satisfactory proof that another good result, besides that already referred to, which was anticipated from these examinations, has really been obtained, and that both among schoolmasters and among pupils there is a growing spirit of honourable ambition to obtain the distinction of a school certificate, and of honourable rivalry as to who shall be mos t successful in the effort.

And not only has the number of candidates steadily increased year by year, but also the number of schools in which candidates have come forward. Thus examinations for certificates were held in 41 schools in my district during the past year, as against 32 schools in which examinations were held in the year 1867, and 37 schools in which examinations

were held in 1866. The number of separate examinations for certificates during the past year was 68, as against 46 in the year 1867, and 50 in 1866. And the number of candidates examined for certificates during the past year was 1,734, as against 1,636 examined in the year 1867, and 1,259 examined in the preceding year.

On the other hand, the number, and of course the proportion, of successful candidates for school certificates has been rather less during the past year than during the year immediately preceding. This falling off in the total of successful candidates has indeed been so small as to be of very little importance—the numbers being respectively 1,003 and 1,017. But a circumstance much more to be regretted is the great diminution in the proportion of certificates of the higher classes (first and second) taken by the candidates examined during the past year.

Among the candidates for first-class certificates there has not been a larger proportion of failures than formerly.

But there has been a great diminution in the number of men presenting themselves as candidates for certificates of this class. This is said to have arisen from a belief prevalent in the schools that certificates of the first class are more easily obtainable beyond the limits of my district of inspection than within the district. How far this belief is well founded, and if well founded how far it has operated to produce the effect attributed to it, I am not in a position to say with much certainty or precision. But I have little doubt that such a belief exists, and that it has had some effect in deterring men from exposing themselves to what they have considered to be unnecessary risk of failure in the endeavours to obtain a certificate from me, which they have supposed that they might much more confidently reckon upon winning when examined in another district by somebody else.*

The failure of many to obtain the second-class certificate is in part attributable to the introduction of a more difficult class of questions on simple interest than was admitted into the arithmetical paper originally drawn up by the Council of Military Education for the guidance of assistant and local inspectors in conducting their examinations for certificates, or than has even yet, I fancy, been adopted in any district except that in which I make my inspections. The questions on mess accounts, ledger accounts, and regimental savings bank accounts also continue to present great difficulties to many who aspire to possess a certificate above the lowest class. In a former report I have described the excellent effect with which this branch of arithmetic is taught in some schools with the aid of black boards painted (by the masters themselves) upon one side, to represent the recognized form for the keeping of these accounts. I recommend the plan again to the notice of schoolmasters who may not yet have adopted it.

Of those who have obtained third-class certificates a very large proportion are possessed of qualifications greatly in advance of the standard indicated by their certificates. Indeed I think that notwithstanding the smaller number of the men who have obtained the higher certificates, the average character of the examination papers which have come before me has been superior to that of any previous year. Even of those who failed to obtain any certificate at all a large proportion were qualified—and well qualified, too—in spelling and writing, but not qualified in arithmetic. And it may be useful to schoolmasters if I mention that questions 3 and 5 of the papers of arithmetic are those in which men, often well qualified in other particulars, most frequently fail. In

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* *Note by the Council of Military Education* :—Since this was written, all the Examinations for Certificates at Home have been placed under the control of Colonel Gleig.

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question 3 (on division of money) the occurrence of 0 in the quotient is a fatal stumbling-block to a great many men who but for it would come off with flying colours.

I have been rather less indulgent during the past year than in previous years in giving a second chance to men who may have failed to satisfy me at first that they were fully qualified in arithmetic to receive certificates, and this perhaps has had some effect in keeping down the number of successful candidates.

In fact in all respects I think it possible that the test has been a little more severe by which the qualifications of candidates for certificates have been tried in my district during the past year than it was in previous years, and yet the results upon the whole have been by no means unsatisfactory, notwithstanding the diminished number of certificates of the two higher classes which has been taken. The object of the examinations for certificates I take to be mainly the improvement of the instruction given in the schools, and I have no doubt whatever that much has been accomplished in this direction. At the same time I shall be glad to find in the year now commencing that the number of candidates for first-class certificates and the number of both first and second class certificates actually taken exceed, instead of falling short of, any number reached in former years.

I have no doubt that it would tend to give an increased value to the examinations for certificates in the eyes of schoolmasters—perhaps also in those of commanding officers—if assistant and local inspectors were empowered to dispense with the periodical examinations of the adult schools by the schoolmasters, in all cases in which a fair number of candidates should have been examined for certificates with satisfactory results in the course of the year or half-year immediately preceding the period at which the schoolmaster's examination would in the ordinary course of things be made. I have always thought it very desirable to reduce as much as practicable the amount of correspondence and the number of returns required of schoolmasters, and I know that they, on their part, are very desirous of obtaining some relief in this direction. I make the above suggestion in the belief that it would enable us to accomplish something in this way, at the same time that it would ensure the attainment of the object—namely, the efficient instruction of the men attending school—which the periodical examinations and returns are designed to test and to promote. Within the United Kingdom, at any rate, I am confident that the plan might be adopted with good effect. But uniformity of system in examining for and awarding certificates is of course essential to its success.

I think that a good effect also might be produced if an extra week's holiday were granted every year, either at Midsummer or at Christmas, according to circumstances, in one school in the United Kingdom which should be considered to be the best of the year. And in determining the comparative claims of different schools to this indulgence, the number of men examined for school certificates throughout the year, and the results of their examinations, should be a chief element of consideration, though of course not the only one. The enjoyment of the additional holiday would count for much with many teachers; and it might be anticipated that the credit of winning it would be coveted by all, and that schoolmasters would be ambitious of obtaining the distinction which would attach to success even more than of securing the small additional relaxation. And the encouragement of the schoolmaster undoubtedly means, to some extent, the encouragement of the school.

Besides these methods, by which I believe that an impetus might be given to the instruction of adults in the regimental schools, there is another very effectual one which I have suggested to the Council of Mili-

tary Education in a former report, and have recommended many times to commanding officers. Let no man leave school after he has once joined it until he has obtained a third-class certificate at least, or has been pronounced by the schoolmaster to be by nature incapacitated for obtaining it.

It has often been represented that the character of the certificates should be modified in some respects to meet the cases of men who fail, though by very little, to qualify for the higher classes of them, and who are consequently awarded certificates of the third class. Such certificates of course in no degree represent the real attainments of the recipients; and it is alleged that many men who are very well instructed, and who are disposed to offer themselves for examination, are deterred from doing so by the consideration that if they fail by ever so little to qualify for a first or second class certificate, they will receive only a certificate which testifies that they can read easy narratives, can write to dictation a piece from the same, and can work fairly the four first rules of arithmetic, simple and compound. The receipt of such a certificate is felt by such men not only to be of no use to them, but even to be objectionable from a certain point of view.

I do not myself sympathize with this feeling, but I cannot doubt that it is entertained very widely, and therefore it deserves to be considered. Various suggestions have been made to me for the removal of the difficulty presented by it. I think the best is that of Mr. Belling, who is of opinion that every candidate for a school certificate, of whatever class, should be compelled to undergo the examination for third class, in the first place, and that such examination should be strictly limited to those subjects which alone are named on the face of the third-class certificate. Mr. Belling supposes, and I think that he may not improbably be right, that under this arrangement the preliminary examination of the first and second class candidates for the third-class certificate would come to be regarded as a mere matter of form, and the receipt of a third-class certificate lose whatever of a derogatory character is now held to attach to it. I see no objection to making the experiment, and indeed should be very glad to see it made; but if done at all it should be done universally, or at least in all regimental schools throughout the United Kingdom. To try the plan in one district only would probably be to ensure the failure of it.

There has been an increase in the number of special classes within my district during the past year. The number has been 41, as against 36 in the preceding year. The benefit derived by men who attend these classes regularly has never been disputed; and every year's experience shows that at most stations, and under ordinary circumstances, the wishes of the Council of Military Education can be fully carried into effect without interfering in any inconvenient manner with the proper performance of the usual duties of a regiment. But it is only when the wishes of the Council are fully carried into effect in the organization and management of the special classes that these can be expected to produce results worth striving after; and it seems desirable to impress this strongly upon the attention of some commanding officers who have established such classes. The instruction afforded to adults who regularly attend a well-organized and well-managed special class is not all gain. It is purchased in most cases at the expense of a certain disadvantage to the school of grown children of the regiment. The special class is always, as far as my experience goes, under the immediate charge of the head master, and engages all his attention; and if the class attend during the whole of the forenoon, it is plain that under these circumstances the children must be taught entirely by the school assistants, who are rarely capable of teaching as efficiently as the trained master.

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When, therefore, a special class is allowed to fall very low in numbers, the maintenance of it will probably do more harm to the children than it will effect of good amongst the adults.

I have seen a special class which, having originally been of suitable strength, had gradually fallen, by the removal of men whose places had not been filled up, till it comprised only some half-dozen of pupils, and this, too, in a school which was in all other particulars extremely well managed, and in which the commanding officer undoubtedly took very great interest. But he erred, in my opinion, in thinking that it was better to maintain an excessively small special class than none. I, on the contrary, hold, for the reasons which I have given, that it is better not to have a special class at all than to have one of much less strength than was contemplated by the Council of Military Education, when the establishment of special classes was first recommended by them.

I have again to call attention to the disposition shown by many schoolmistresses to entrust the giving of collective lessons to their monitresses. The excuse usually given for doing so is, that it is proper the monitresses should have the opportunity of practising collective teaching. But in my opinion this is not at all proper. The monitresses are employed (unless I quite misapprehend the intentions of the Council of Military Education) for the purpose of aiding the schoolmistresses in giving class lessons (mainly in reading and spelling), and in the management of the afternoon school, and for nothing else; all collective teaching on the gallery should be given by the schoolmistresses or acting schoolmistresses, and by them alone; and the monitresses should be under instruction in the master's school when the collective lessons in the infant school are in progress. One would think that some mistresses suppose the infant schools to be maintained in order that the monitresses may have the opportunity of practising as teachers, instead of for the sole purpose of affording instruction and training to the children. A large proportion of the monitresses can never become schoolmistresses. Those that become schoolmistresses must first be pupil teachers, and in that position they will have the opportunity of observing the collective teaching of the mistresses under whom they may be employed, and they will have the opportunity of practising collective teaching themselves when they become acting schoolmistresses in their period of probation, during the six months (more or less) immediately before they are rated as effective third-class mistresses. I conceive that they ought not to give collective lessons as monitresses or pupil teachers except on an emergency, as in the case of a schoolmistress being absent or sick.

If I am right in this view of the duties of mistresses and their assistants, I believe it would be of advantage if the Council of Military Education would express their concurrence in it in an authoritative manner. If I have misconceived the intentions of the Council, it would not less be of advantage that they should define with some exactness what duties they propose that the schoolmistresses should be allowed to depute to their monitresses and pupil teachers. Some of them seem to me to allow these to undertake all the duties of a schoolmistress, notwithstanding what was said upon the subject in a former published report.

I have had occasion to draw the attention of the Council of Military Education to the circumstance of the sewing materials running short before the receipt of the money for the purchase of a new supply. The alteration which has been made in the form of certificate to be signed by commanding officers in making the annual requisition for the capitation grant will, it may be hoped, prevent a recurrence of this very serious inconvenience. The sewing materials of one year should be made to last until those of the succeeding year have been procured; and in all regimental arrangements for the distribution of clothing to the children this

should be kept in view. I have reason to believe that cases have occurred of schoolmistresses working up the industrial school materials themselves, out of school hours, in order to have clothing ready for distribution by a particular day, fixed by the commanding officer, long antecedent to the end of the financial year, when the new supplies would become due. I am sure that this is quite opposed to the spirit of the school regulations, and to the wishes of the Council of Military Education. The sewing materials supplied at the public expense should only be made up during the regular school hours, and by the pupils themselves, under proper instruction from the schoolmistresses.

I have drawn attention, according to custom, to the various points now mentioned, because I have thought that a necessity for doing so still exists in some schools, and the most convenient occasion which I have of addressing observations of general application to the schoolmasters and schoolmistresses of the army is that presented by the biennial report to the Council of Military Education, in due time to be published and circulated. But I have no reason to vary the favourable report which I have heretofore felt justified in making of the schoolmasters and schoolmistresses as a body, of their attention to their duties, their general good conduct, and the useful influence which I have not the slightest doubt that most of them are exercising in their respective spheres of action.

It is very satisfactory to know that for the third time pupils from the regimental schools have acquitted themselves during the past year with the highest credit at the examinations conducted by the local board at Aldershot in connexion with the Society of Arts, and that the number of successful candidates from those schools for the prizes and certificates of the local board were greater in the last year than in the preceding ones. I believe that this fairly illustrates the relative efficiency of the army schools and those of a corresponding grade in civil life. It is only one of several circumstances which induce me to believe that the army schools are not only as a body not inferior to civil schools of corresponding degree, but that there are many more among them of superior character to the best civil schools of corresponding grade, than of inferior character to the average of civil schools, whether adult schools, schools of elder children, or sewing schools.

I have, &c.,
A. C. Gleig,
Assistant Inspector of Army Schools.

To the Secretary,
Council of Military Education,
London.

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Return of Certificates awarded by Colonel Gleig in 1868.

Regiments and Corps in which Examinations for Certificates were held, from 1st January 1868 to 1st January 1869.	Number of Certificates obtained in the several Classes.			Total of Certificates in all Classes.	Names of Schoolmasters.
	1st.	2nd.	3rd.	Totals	
1st Life Guards	—	2	11	13	Pollard.
2nd „	—	—	13	13	Ransom.
1st Dragoon Guards	—	—	5	5	Capern.
4th „	—	2	15	17	Hayes.
5th „	—	—	23	23	Perkins.
10th Hussars	—	—	2	2	Coo.
Military Train	—	6	24	30	Fowler.
B. Brigade, R. H. Art.	—	6	22	28	Rogers.
C. „ „	—	4	13	17	Hickling.
Depôt Brigade, R. H. A.	—	—	22	22	Goadby.
Riding House	—	2	2	4	Rogers.
4th and 9th Brigades, R.A., at Aldershot	—	6	16	22	Hickling.
7th Brigade, R. A.	—	—	19	19	Mackinder.
11th „ „	—	—	9	9	Langford.
13th „ „	1	10	15	26	Cochrane.
17th „ „	1	10	42	53	Bacon.
Depôt Brigade, R. A.,— 1st Division	—	10	30	40	Lowman.
2nd „	1	1	23	25	Thacker.
3rd „	2	12	40	54	Stanton.
Coast Brigade, R. A.	—	1	—	1	Rogers.
R. Engineers at Aldershot	—	8	6	14	Carson.
Military Store Staff Corps	—	7	13	20	Rogers—Thacker.
1st Battalion Grenadier Guards	2	3	36	41	Richardson.
2nd Battalion 2nd Foot	—	1	4	5	Taylor.
2nd „ 5th „	—	2	33	35	Smears.
2nd „ 6th „	—	—	6	6	Stapley.
2nd „ 8th „	—	1	13	14	Wheeler.
1st „ 20th „	—	2	8	10	Winter.
27th Foot	—	—	8	8	Matthews.
34th „	—	1	20	21	Hobbs.
40th „	—	4	13	17	McMahon.
51st „	—	—	14	14	Stewart.

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Regiments and Corps in which Examinations for Certificates were held, from 1st January 1868 to 1st January 1869.	Number of Certificates obtained in the several Classes.			Total of Certificates in all Classes.	Names of Schoolmasters.
	1st.	2nd.	3rd.	Totals	
57th Foot - - -	—	3	14	17	Scholvein.
80th „ - -	—	3	18	21	McElwee.
97th „ - - -	—	3	19	22	Rix.
98th „ - - -	—	3	35	38	Skuny.
1st Depôt Battalion - -	—	26	88	114	Runcieman.
2nd „ „ - -	—	30	77	107	McIlheron.
3rd „ „ - -	—	3	38	41	Parsons.
6th „ „ - -	—	3	12	15	Giles.
Total - -	7	175	821	1003	
Total of unsuccessful Certificates - -	In all classes			731	
Total of Candidates examined - -	In all classes			1734	

TABLE showing NUMBER of CERTIFICATES of different CLASSES obtained by different RANKS.

Class of Certificate.	Non-commissioned Officers, full and acting.	Privates, Gunners and Drivers.	Drummers, Trumpeters, &c.
1st - - -	2	5	—
2nd - -	83	78	14
3rd - - -	318	408	95
Total - -	403	491	109
Grand Total -	1003		

N.B.—The whole of these 1,734 men were specially examined at their own request. No Certificates were granted at my periodical examinations during the past year.

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Report by Colonel Gleig for 1869.

Sir, 7th March 1870.

The lateness of the period at which the new arrangement for the superintendence and inspection of Army Schools was introduced last year occasioned me a very large and very sudden increase of work of a particular kind, and in consequence my annual report has been delayed much beyond the usual time.

For the same reasons I have not yet been able to become properly acquainted with my new district of inspection, and my report will therefore of necessity be both shorter and less minute than in some previous years.

The monthly reports from some of the schools in that part of the kingdom which has recently been included within my district of inspection do not yet reach me quite regularly, but I have no doubt that the number of schools of the several kinds in my new district, *i.e.*, in Great Britain, are very nearly as follows:—

Adults	112
Grown children	116
Infant and sewing schools	90
Total	318

This total includes 42 schools of one kind or other at about 20 detached stations. The number of detachments, and therefore of detachment schools, varies from time to time, even rather more than the number of head-quarter schools; but the numbers above given represent very nearly the average of schools in the district. They indicate nothing as to the changes of schools by the removal and relief of corps, which are always taking place to a greater or less extent; but only the average number of schools of each kind which at any given moment may be found in the district.

The character of the detachment schools varies very much. In the newly added portion of my district they are much more numerous than in that to which my inspections were formerly limited, and at some of the stations in the manufactnring districts they either are, or are capable of being made, hardly less important than head-quarter schools; and, in my opinion, should be examined and reported on as regularly and as frequently. On the other hand, there are some which at present I am disposed to think ought not to be kept up at all. I hope to be able, in the course of the present year, to visit the whole of the detachment schools, and to make a special report as to the condition and circumstances of each, and as to the expediency or inexpediency of continuing to maintain it.

The superintending schoolmasters, whose sphere of action in Great Britain has been in many cases so much extended, perform their duties regularly and well. Their reports of schools which they have examined have for the most part been favourable, except as to the particular of adult attendance. There have been only two instances, I think, in which their reports have been of a decidedly unfavourable character, and in both I have thought it expedient, after calling upon the schoolmaster for a written explanation of the circumstances unfavourably reported, to give him a chance of

recovering himself before taking more serious measures; but in both cases I entertain no doubt whatever of the justness of the superintending schoolmasters' reports.

In the month of December 1869 the special classes reported to be in operation in the district were 27 in number. Throughout the year 39 have come to my notice, and in 23 of these the special class system appears to have been effectively carried on, both in respect of the number of hours devoted to the instruction of the pupils, and in respect of the regularity of the attendance. In the remaining 16 this was not the case.

I have so often and so fully expressed to the Council of Military Education my opinion of the advantages and occasional disadvantages of what is understood by the system of "special classes," that it is unnecessary for me to repeat myself now. I believe it quite practicable to enforce regularity of attendance on the part of men (not being non-commissioned officers) who have their names in the school books, without taking them, as in our special class system, away from the performance of all regimental duty four or five days a week; and if such regularity of attendance were enforced, and the period of each attendance were kept up to an hour and a half or two hours, an immense deal of instruction could be given in the course of a few months, as compared with that which can be imparted when the attendance is so irregular as it usually is under the arrangements actually in force, and then special classes, using the term in the sense which it now bears, would be unnecessary. Every school would be a special class; only instead of a few men being kept away from the greater part of their regimental duties in order to attend school regularly for several hours each day—more or less to the detriment of the school of elder children be it observed—a large number of men would be compelled to attend with regularity for two hours each day at most, and would be exempt from the performance of those few duties which might chance to fall upon the school hours.

I append, as usual, a return of the number of examinations held for the purpose of ascertaining what men might be recommended to their commanding officers to receive certificates of education. It is distinguished from similar returns which I have rendered before, by the circumstance of its including the whole of the corps in Great Britain and Ireland and the Channel Islands, in which men were desirous of obtaining these certificates, from the month of October 1869.

The proportion of certificates in the higher classes taken is smaller than in schools examined by me in previous years, and the proportion of men who failed to get certificates at all is greater than formerly. But the number of men who have offered themselves for examination is greatly in excess of the number that came forward in any previous year; and the number of those who obtained certificates of one class or other absolutely much greater, though relatively rather less, than it has been heretofore. I am of opinion, therefore, that the return is of a very satisfactory character, both as showing that the number of men who think it worth while to make an effort to obtain a school certificate is steadily increasing, and that the number of those qualified to receive certificates is increasing also, though not quite in the same proportion.

The number of corps in which the possession of a school certificate by non-commissioned officers who look for promotion, is insisted upon, is also gradually increasing. I have little doubt that when the alterations in the school certificates, which the Council of

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Military Education think desirable, are carried into effect, it will become much more common in the service for commanding officers to require the possession of a certificate by non-commissioned officers, and by men who aspire to become such, than hitherto.

The following comparative table, which shows in figures the steady increase in the number of corps in which examinations for certificates have been held, and of men examined for certificates, and of certificates granted since 1865, the year in which the first issue of certificates was authorized, will, I hope, be interesting. The year 1868 is omitted, for the reason that the returns of Mr. Vicars and Mr. Sargeaunt of the examinations made by them in that year have not yet been published.

Year.	Corps.	Men examined.	Certificates granted.
1865	33	1,183	739
1866	45	1,798	1,197
1867	54	2,492	1,726
1869	59	2,841	1,512

This table has reference to Great Britain and Ireland, all the schools in which are now under my supervision in so far as relates to the examinations for certificates. The returns of the examinations made by Mr. Sargeaunt and Mr. Vicars, previous to October in 1869, are not yet accessible to me; but if any deduction may be drawn from the returns by those gentlemen already published, it is beyond doubt that the number of certificates granted in 1869, of one class or other, far exceeded the number granted in any previous year. At the same time I do not wish to lay too much stress upon this, because it seems to be beyond dispute that the different assistant inspectors who granted school certificates in former years, measured the attainments of those whom they examined by very different standards. That which is certain from the foregoing table, and at the same time most satisfactory, is that the number of applicants to be examined for school certificates increased largely in each successive year, and that the largest number of applications by far was made in the year in which the examinations were concentrated in the hands of that particular officer who is reported, whether justly, or not, to be the most severe in judging of the merits of the applicants. This appears to me to reflect great credit both upon teachers and upon pupils; and, by the way, it effectually disposes of the allegation still sometimes made by those who have no real acquaintance with the service, that commanding officers discourage the school education of the men. Commanding officers have such a multiplicity of things to look after, that they sometimes find it no easy matter to accomplish all that is expected of them. But I doubt if there be a single commanding officer in the service who is not well pleased when he has a good schoolmaster, and finds that in spite of difficulties his men are making progress in their studies.

The following table shows the successive increase in the number of men who have come forward to be examined for school certificates, and in the number of certificates obtained, from 1865 to the present time, in that portion of the kingdom which was formerly my district of inspection, and in which therefore the attainments of the men examined have been measured by one uniform standard.

Year.	Corps.	Men examined.	Certificates granted.
1865	28	955	593
1866	35	1,259	870
1867	30	1,636	1,017
1868	36	1,734	1,003
1869	41	2,097	1,172

Here, also, a steady increase in the number of aspirants for certificates is shown year by year; and also a continued increase in the number of regiments in which candidates for certificates presented themselves for examination, and in the number of men who succeeded in obtaining certificates of one class or other, with one odd exception in each case. In 1867 the number of corps in which examinations were held fell off considerably; and in the following year the number of successful candidates for certificates slightly diminished. But the general rule is one of steady increase, as may be seen by a glance at the several columns of the table.

Before leaving the subject of school certificates I desire to draw the attention of commanding officers and schoolmasters to the mistake which is sometimes made of bringing men forward for examination so little prepared that the schoolmasters must know beforehand that they have not the smallest chance of obtaining certificates. This is calculated to produce an effect the very reverse of that which no doubt is intended, and to discourage men instead of encouraging them. And it not only discourages the men who fail from coming forward a second time; but it makes other men afraid to offer themselves for examination at all, who nevertheless have, or might easily be induced to have, some ambition to hold certificates of education.

It is of course not to be expected that every man who presents himself for examination shall be in a condition to command success. But men who fail only by a little are often quite ready to come forward again. It is the man who ought not to have been brought forward at all and who fails utterly who is apt either to think that success is quite beyond the reach of such as he, no matter how hard he may work, or, incapable of appreciating beforehand the certainty of his failure by reason of that very ignorance which makes it certain—to believe that he is unfairly judged when he is pronounced disqualified for a certificate. In either case he finds a certain number of comrades who adopt his view and shape their own course accordingly.

It has happened once or twice that men literally quite unable to write to dictation, almost unable to write a copy line, have been allowed to go through the form of sitting at an examination for certificates. Such cases have indeed been very rare; but they ought never to have occurred at all.

The report of the children's schools are generally satisfactory, and I have nothing to add to the suggestions and observations which I have offered upon the method of instruction pursued in them in former reports.

The Council have, I believe, received from Mr. Belling a detailed report of the good position taken by pupils from the regimental schools in the examinations held by the local society of Aldershot and the vicinity in connexion with the Society of Arts in the past

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year. It was not the first occasion on which our schools and schoolmasters had had the opportunity of measuring themselves with the schools and schoolmasters of civil life, and had come out of the amicable strife with honour. Mr. Belling deserves credit for the pains which he has taken to encourage and foster the spirit of honourable emulation under the influence of which some of our best masters at the Camp have brought forward some of the most successful aspirants at the local examinations. Like many other good practices at Aldershot in connexion with the regimental schools, that of pupils from these schools entering the lists for the prizes of the Society of Arts, and of the local society in connexion with it, was first inaugurated by Mr. Grant when he superintended the schools at the Camp, and I think before he received the commission which he had so well earned. Mr. Belling has shown himself in this, as in other things, a most worthy successor of Mr. Grant. I cannot speak too highly of the energy and good temper, and accuracy with which he endeavours to carry into effect the wishes both of his military superiors at the Camp and of myself; or of the intelligent interest which he takes in all that relates to the schools under his superintendence.

I hope that the superintending masters at other stations than Aldershot will exert themselves to bring forward pupils from our schools—not less of adult than of children—to contend for the prizes and certificates offered by the Society of Arts, and by the various local societies in connexion with it. I cannot doubt for a moment that such efforts would redound to the credit of our schools, and of those who conduct them. And I am confident that the great bulk of our schoolmasters are actuated by a sufficiently honourable spirit to lead them to find in this a sufficient inducement to bring their pupils forward at the examinations, and a sufficient reward for any additional labour which they may find it necessary to encounter in order to do so with success.

I have already reported to the Council of Military Education that in several garrisons I have found the libraries in a more or less dilapidated condition, and the catalogues of books more or less imperfect. The commanding officers at the several stations at which I observed this, upon having their attention drawn to it, took immediate steps to have the evil remedied. And in more than one instance it was they themselves that represented the state of things to me, with some complaint, by no means unfounded, of the neglect of those who had preceded them at their respective stations.

It is of the utmost importance that the books should be kept in good order, and that the lists of books should be carefully and accurately kept: unless this is done, a few years will see the Army without libraries, now that the public no longer makes grants of books as these are reported, from time to time, to be required at the several stations. The libraries, as they stood a few years ago, were made over to the troops, to be maintained by them, and managed by them, under certain regulations, and unless every regiment is careful to keep a library in good order whilst under its charge, and insists upon receiving a library in good order from the corps which it relieves whenever it changes its station, there will soon be nothing left in any of the libraries except works of those particular classes which are not popular with the general run of soldiers, and, therefore, are not much exposed to the risk of being worn out. I think it would be of advantage in certain districts to consolidate some of the small outlying libraries into one central library from which the books should be circulated throughout a given district periodically. There

are, of course, many things to be considered before determining to adopt an arrangement of this kind; but the example of Aldershot is sufficient to show that the principle is a sound one, where it can be carried into practice, and on the other hand the example of Manchester, where there are two libraries within an easy walk of each other, containing duplicate copies of numerous works, of some of which a single copy would be superflous, illustrates the soundness of the principle equally well, though in a different and much less satisfactory manner.

The reading-rooms and recreation-rooms, wherever suitable accommodation has been provided, continue to be, as heretofore, much in favour, both with officers and men. I think them amongst the most powerful instruments of civilization which have been brought to bear upon the troops since I have been connected with the army; and therefore one of the most useful products of the modern army school system, out of which they directly sprang.

I have, &c.,

The Secretary to the Council of Military Education.

A. C. Gleig, Colonel, Inspector of Army Schools.

Return of Certificates awarded by Colonel Gleig in 1868.

Regiments and Corps in which Examinations were held from January 1869 to January 1870.	Number of Certificates obtained in the several Classes.			Total.
	1st.	2nd.	3rd.	
1st Life Guards	—	—	6	6
2nd „	—	—	4	4
5th Dragoon Guards	—	5	15	20
7th „ „	—	—	4	4
6th Dragoons	—	—	8	8
8th Hussars	1	2	5	8
B.—Royal Horse Artillery	—	1	11	12
C. „ „	—	5	4	9
Depôt „ „	—	3	42	45
4th Brigade, Royal Artillery	—	4	20	24
7th „ „	—	4	20	24
11th „ „	—	8	34	42
12th „ „	—	1	6	7
13th „ „	—	3	6	9
14th „ „	—	1	3	4
17th „ „	—	16	11	27
21st „ „	—	—	8	8
Depôt Brigade „				
1st Division	—	5	27	32
2nd „	1	22	48	71
3rd „	—	5	27	32
R. A. Detachment at Shoeburyns.	1	21	33	55
R. E. „ at Aldershot	—	11	28	39
Military Train	—	16	18	34
Military Train Staff Corps	—	4	20	24
2nd Scots Fusilier Guards	—	9	9	18
2/2 Foot	—	—	—	—
2/3 „	—	—	8	8
1/4 „	—	1	9	10
2/5 „	—	10	37	47

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No. 2.

Regiments and Corps in which Examinations were held from January 1869 to January 1870.	Number of Certificates obtained in the several Classes.			Total.
	1st.	2nd.	3rd.	
2/6 Foot	—	3	62	65
2/7 „	—	5	22	27
2/8 „	—	4	36	40
1/12 „	—	1	10	11
2/13 „	—	2	9	11
2/17 „	—	—	23	23
1/20 „	—	8	28	36
2/22 „	—	1	15	16
2/23 „	—	—	2	2
1/25 „	—	—	6	6
27th „	1	7	13	21
33rd „	—	2	13	15
34th „	—	5	44	49
35th „	—	5	12	17
40th „	—	1	9	10
42nd „	—	8	20	28
50th „	4	9	14	27
57th „	—	—	17	7
68th „	—	3	2	5
91st „	1	2	28	31
97th „	—	4	24	28
98th „	—	1	16	17
99th „	—	—	8	8
2nd Rifle Brigade	—	5	10	15
4th „ „	—	4	6	10
Guards Depôt	—	1	11	12
1st Depôt Battalion	1	9	91	101
2nd „ „	—	16	46	62
6th „ „	3	6	48	57
7th „ „	—	—	10	10
9th „ „	—	9	29	38
10th „ „	—	13	40	53
11th „ „	—	2	11	13
Total	13	297	1,202	1,512
Total of unsuccessful Candidates	in all Classes			1,329
Total of Candidates examined	in all Classes			2,841

Appendix II.—No. 3.

App. II.
No. 3.

Report by Mr. Vicars for 1868.

Sir, March 15, 1869.

I have the honour to forward herewith my report of the schools, libraries, reading and recreation rooms in my district for the year ending the 31st December 1868.

Exceptional period, and unfavourable to adult education in Ireland.

The exceptional circumstances which have characterised the last two years, and have to a material degree impeded the progress of adult education among the troops in Ireland, have recurred to a considerable extent during the past year. As I have previously reported on more than one occasion, the necessity which arose, since the outbreak of the Fenian disturbances, to protect outlying towns and villages from danger and from plunder by the presence of a military force has caused regiments, more especially those in the south and in the west, to be broken up into such numerous detachments that frequently three and sometimes only two companies have represented the contingent at head-quarters. It will be unnecessary for me now to recapitulate the impediments and disadvantages, in an educational point of view, which must naturally arise from such a state of things. I have already in previous reports entered at length into the subject. It will suffice for me to say that I regard with hope and satisfaction the prospect, if not of the absolute removal, at all events of the abatement, of so palpable a hindrance to effective school operations and I have pleasure in stating that, all things considered (bearing in mind the drawbacks referred to, supplemented as they have been towards the close of the year by the occurrence of a general election), the condition of the schools in my district may fairly be regarded with satisfaction, that the progress has been steady and proportionate, and that in the increased and increasing interest which is taken in the possession of certificates of education, there is good ground for anticipating results still more substantial and a success yet more complete.

Prospect of the abatement of this evil.

Progress steady.

Increasing interest in educational certificates.

I will now proceed, in accordance with my annual custom, to place before the Council in a tabular form such statistics as seem to me to be calculated to describe in the most authentic characters the position of military schools in Ireland, to portray their condition, and to illustrate their prospects.

I commence with the adults. The number of men of all ranks on the school registers in December 1868 were 3,375. This is a falling off from last year's total of 261, but the way in which the aggregate of 1868 is made up fully compensates, in my judgment, for the mere numerical deficiency. In 1867 the figures were :—

Number of adults on school registers in the various ranks, and average daily attendance in December 1868.

Sergeants - - - -	171
Corporals - - - -	582
Privates - - - -	2,604
Drummers - - - -	279

For 1868 they are as follows :—

Sergeants - - - -	268
Corporals - - - -	703
Privates - - - -	2,014
Drummers - - - -	390

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Thus it will be seen that the increase of non-commissioned officers and drummers has been very considerable, consisting of 97 sergeants, 121 corporals, and 111 drummers. A large proportion of the privates on our registers are recruits, who are usually compelled to attend school. Considering, then, that several regiments have of late stopped recruiting, and that there has been a sensible reduction of the dutymen available at head-quarters, these figures are the reverse of discouraging. But when we come to examine them in connexion with the average daily attendance they assume a still more favourable aspect. I find that the average daily attendance in December 1868 was 1,527, thus distributed :—

Sergeants	24
Corporals	157
Privates	1,071
Drummers	275

The increase amounts to 437, a most material addition, and one which serves to bring the attendance into something more like proportion to the number on the registers. Thus the average daily attendance in December 1868 was of—

Sergeants	8 per cent. of the number on the school books.
Corporals	22 ,, ,, ,, ,,
Privates	53 ,, ,, ,, ,,
Drummers	70 ,, ,, ,, ,,

Per-centages of those on the books present on the daily average.

The per-centages for 1867 stood thus :—

Sergeants	11 per cent.
Corporals	16 ,,
Privates	35 ,,
Drummers	56 ,,

Excepting, then, as to sergeants, where the decrease is three per cent., these returns are highly encouraging.

Number of men examined, and their classification.

The number of men examined in my district during the past year was 2,096, as against 1,774 in 1867, or an increase of 322.

The classification of these 2,096 adults in reading, dictation, and arithmetic, based upon the standards prescribed by the regulations, is as follows :—

Reading.

A.	488
B.	475
C.	402
D.	300
Over	101
Under	330
	2,096

Dictation.

A.	272
B.	303
C.	289
D.	409
Over	74
Under	749

Arithmetic.

A.	115
B.	251
C.	195
D.	384
E.	361
Over	10
Under	780

Of these 2,096 men, therefore, 28 per cent. belong to standards A. and above A. as to reading, 16 per cent. as to dictation, and 6 per cent. as to arithmetic.

Those "below" the standards are: in reading 15 per cent., in dictation 35 per cent., and in arithmetic 37 per cent. These figures scarcely vary from those of 1867, but with the number examined augmented by 322. It is something that the per-centages have been sustained, if not absolutely raised.

Progress tables.

The progress made in the three subjects, as to which it is calculated, is shown in the following table:—

Dictation.

Great progress	134
Progress	878
Stationary	737
Gone back	71

Writing.

Great progress	96
Progress	1192
Stationary	555
Gone back	36

Arithmetic.

Great progress	143
Progress	958
Stationary	708
Gone back	56

Analyzing these figures, it appears that 55 per cent. have made "great progress" or "progress" in dictation, 68 per cent. in writing, and 58 per cent. in arithmetic.

Suggestion as to the insertion of a column to mark progress in reading.

It may, perhaps, be opportune at this point of my report to make a suggestion to the Council as to the introduction of a column in the table of progress for reading, considering that teaching it, perhaps, is the most laborious part of the schoolmaster's duty, and it is necessarily preliminary to the acquisition of other kinds of instruction, it appears to me that some provision should be made for recording the results attained in this subject, as has already been done in regard to the others. It may be objected, that if the pupil's improvement in this respect is not such as to entitle him to pass into the standard above him, there will be no method of noting what may nevertheless have been a substantial progress. To this, I think, it may be answered, that the intervals at which the examinations take place render it most probable that in many cases, at all

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events where the attendance of the adult has been real and not nominal, he will qualify for a higher standard in reading; but even if he should not do so, the discretion of the examiner will enable him without difficulty to appreciate at its merit the progress made, and to register it accordingly. The addition of such a column will also re-inforce our means of estimating the work of a schoolmaster, and the inspector, if he sees occasion for it, may produce in his report the facts and figures which bear upon the subject. The progress, of course, can only be noted as to the men *present*, but as those who are absent from an examination are for the most part the more advanced pupils, the value of the information will scarcely be diminished by its being partial, if it comprehends within its scope not only the majority, but that portion of an adult school whose progress is most important and interesting.

Certificates of education.

Opinion in favour of connecting certificates with the visit of the inspector.

I now come to the question of certificates of education, and, as I have already intimated, I am happy to state that the number of candidates has increased and is still increasing. Although the opinion does not appear to be shared by my colleagues, I still think that the connexion of these certificates with the periodical visit of the inspector is a decided stimulus to the interest of the men in their acquisition, that it augments the number of candidates, that it enhances the importance of the inspector's examination by attaching to it rewards for merit under official sanction, and that there is, in my humble judgment, no reason why the examination should not be conducted by the inspector himself as rigidly and as strictly as it can be under the superintendence of a board furnished by him with examination papers. It certainly increases the labour of the inspector at the time, and makes additional demands upon his care and vigilance to secure that the work may be fairly done by the candidate and without any assistance. But, properly speaking, if his report is to be accepted as reliable and authentic, he must exercise this precaution even as regards men who are not candidates for certificates; and although, no doubt, there may be some difficulties in the arrangements, they are not, I think, of a formidable character, and are worth encountering for the object. I do not wish at all to be understood as desirous of confining the grant of certificates to these periodical visits of the inspector, for I have found, as a matter of fact, that the applications for examination papers have considerably increased, but I am only anxious to vindicate the issue of certificates at such times if there are men qualified to hold them. Mr. Newsom and Mr. Robertson, the superintending schoolmasters in my district, have been able to recommend a considerable number of candidates on the occasion of their examinations, and I think that as the instructions laid down for their guidance, as for mine, are precise, and the qualification is definite, there need be no apprehension that they will err on the side of laxity in the conduct of their examinations, more especially as their recommendations are in every case submitted for my approval and confirmation before they are acted upon.

No desire to see them confined to this period.

The examination assigned to the several grades of certificates.

I wish to say one word as to the nature of the examination assigned by me to the several grades of certificates. I have always endeavoured to adhere closely to the regulations laid down by the Council, which are, I think, sufficiently distinct and positive for all practical purposes. The note at the foot of Form A., relative to the respective subjects required for each class of certificate, leaves no opening for misconstruction or difficulty as to the precise qualifications enjoined; and I believe that in my district the letter and spirit of the instructions have been obeyed. I append in the usual form a tabular

statement of the number of certificates in the several grades for which I have recommended candidates during the past year.

Special classes only in nominal existence.

I am sorry to report that the system of "special classes" has still only a nominal existence in Ireland. The exceptional circumstances already referred to have no doubt augmented the difficulties of commanding officers in the organization of these classes, as well as in giving effect in its integrity to the principle on which they are founded. I am not in a position to suggest any particular plan in furtherance of this most valuable system. Wherever I have seen a fair opening for its introduction I have recommended to commanding officers to give it a trial. I entertain the hope that during the present year circumstances may be more propitious than they have been of late. As a rule commanding officers are fully sensible of the great advantage of having non-commissioned officers of adequate educational attainments, and should it be found feasible to attach to the various ranks a certain class of certificate as a necessary qualification (I am speaking of course in times of peace) I think that not only would the benefits of instruction be more generally and keenly appreciated by the soldier, but that this system of "special classes," or one akin to it in character and design, would be adopted as calculated to accomplish the object in the most speedy and effective manner.

Children's schools; the average daily attendance and number on school books for December 1868.

The children's schools in my district are on the whole in a satisfactory condition. In some regiments the children are no doubt backward, and not over-intelligent, but this is due principally to the neglect of their parents in their early years. The children of soldiers married without leave, but who subsequently have been placed on the strength of their regiments, show for the most part that little if anything has been done for them in the form of instruction; but the attendance is generally so regular, and enforced by such happily stringent regulations, that the lee-way may soon be made up to a considerable degree by the combined industry of the pupil and the activity of the teacher.

The number of children examined, and their classification and progress.

The number of children ("grown") on the school books in Ireland in December 1868 was 812, thus composed :—

Boys	456
Girls	346

The average daily attendance for that period was 1,588, consisting of—

Boys	346
Girls	254

These numbers show that 73 per cent. of the boys and 71 per cent. of the girls attended on the daily average.

The number of grown children examined in 1868 was 679 as against 550 in 1867, and their standard classification is as follows :—

Reading.

A.	103
B.	149
C.	155
D.	159
Over	16
Under	97

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Dictation.

A.	63
B.	78
C.	105
D.	138
Over	15
Under	280

Arithmetic.

A.	39
B.	46
C.	90
D.	84
E.	111
Over	17
Under	292

Per-centages of attainments and progress.

These figures yield the subjoined per-centages :—

Reading.

A., and above B. A. - - - 39 per cent.

Dictation.

A. and above B. A. - - - - 23 per cent.

Arithmetic.

A. and above B. A. - - - 15 per cent.

The progress made is thus represented :—

Dictation.

Great progress	91
Progress	307
Stationary	156
Gone back	4

Writing.

Great progress	110
Progress	410
Stationary	53
Gone back	4

Arithmetic.

Great progress	92
Progress	368
Stationary	114
Gone back	4

Thus 71 per cent. have made great progress or progress in dictation, 91 per cent. in writing, and 82 per cent. in arithmetic. This is a most gratifying return.

Infant schools.

The number of infants on the school books for December last was 1,296, composed of—

Boys	650
Girls	646

The daily average attendance for that month was 988, *i.e.*:—

Boys	492
Girls	496

Showing a per-centage of 75 boys and 76 girls.

The infant school system seems to work satisfactorily. The accommodation in many cases, as I have reported in the ordinary way, is of too confined and limited a character. It is highly desirable, with a view to the efficiency of the system, that the infant school should be held in a separate room from that occupied by the grown children; that there should be a gallery for the children, and desks and forms of suitable size and height, and that there should be space enough for marching and facing.

Singing.

The singing, both in the grown children and infant schools, continues to be indifferent, and I cannot discover any decided improvement since my last report. Whether it is that soldiers' children are naturally unmusical, or that the teachers generally have not the ear and taste to qualify them for giving instruction in singing successfully, or that they do not bestow sufficient time and attention upon it, I cannot determine; but the inferiority in this respect is probably due to a combination of these causes.

Industrial schools.

The number of children attending in industrial schools in Ireland on the daily average in December last was 1,083. I have seen no reason to find fault to any extent with the materials chosen or the workmanship. There can be no question that the grant is a great boon to the children, and the custom of giving to the child, as far as it is practicable, the article of dress she has herself made imparts an additional interest to the work, and serves to reconcile the mothers to the loss of their daughters' services at home when they find their time is so profitably employed at school.

Conduct and character of the schoolmasters and schoolmistresses.

I am happy in being able to speak once again most favourably of the character and conduct of the schoolmasters and schoolmistresses in my district, and I wish to bear testimony to the valuable assistance I have reeeived from Mr. Newsom and Mr. Robertson.

Libraries, reading, and recreation rooms, &c.

Indifferent accommodation.

The library system continues to give satisfaction, and to work smoothly. Due care and supervision are exercised in the selection of the newspapers and periodicals, so as to exclude works of an objectionable character. The accommodation is still indifferent in many barracks, and the full benefits of the system cannot be enjoyed where this is the case. The deficiency, so far as Portobello barracks is concerned, has been amply supplied in the form of a large and a most commodious building, erected, I believe, on the model of the reading and recreation rooms in Richmond barracks. It cannot but be desirable to extend this kind of accommodation as far as is practicable. Anything which can be done in this way to counteract the attractions of the town, and to furnish the soldier with rational amusement and enjoyment during his hours of leisure in his own barracks is surely well worth the cost.

I have, &c.

EDWD. A. VICARS.

The Secretary,
Council of Military Education.

App. II.
No. 3.

Return of Certificates awarded by Mr. Vicars in 1868.

Regiments or Corps in which Examinations were held from 1st January 1868 to 1st January 1869.	Number of Certificates obtained in the several Classes.			Total Certificates obtained in all Classes.
	1st.	2nd.	3rd.	
1st Royal Dragoons	—	2	3	5
2nd Dragoons	9	30	36	75
3rd „ (Buffs)	1	4	1	6
Grenadier Guards	12	13	30	55
Coldstream „	5	42	14	61
4th Foot	—	2	10	12
6th Dragoon Guards	28	20	16	64
12th Lancers	7	8	16	31
14th Hussars	—	6	13	19
17th Foot, 1st Battalion	5	18	15	38
17th „ 2nd „	—	5	9	14
39th Foot	9	18	16	43
44th „	—	15	4	19
52nd Light Infantry	6	4	27	37
54th Foot	—	4	5	9
56th „	—	5	25	30
62nd „	1	6	10	17
63rd „	—	4	14	18
66th „	3	5	8	16
71st „	3	—	13	16
81st „	1	16	—	17
89th „	—	20	21	41
Royal Artillery	1	10	22	33
Total of Certificates in the several Classes	91	257	328	676
Total of unsuccessful Candidates		120		120
Total examined		796		796

Table showing the Number of Certificates in the several Classes obtained by different Ranks.

Class of Certificate.	Non-commissioned Officers, full and acting.	Privates, Gunners, and Drivers.	Trumpeters, Buglers, and Drummers.
1st Class	33	45	13
2nd „	136	87	34
3rd „	140	164	24
Total	309	296	71
Grand total		676	

Remarks.—120 men were disqualified, viz., 47 non-commissioned officers, full and acting, 62 privates, gunners, and drivers, and 11 trumpeters, buglers, and drummers.

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App. II.
No. 4.

Report by Mr. Vicars for 1869.

Sir, 25th February 1870.

I have the honour to forward the accompanying report of the schools, libraries, reading and recreation rooms, &c. &c. &c., in my district for the year ending the 31st December 1869.

I have on several previous occasions directed attention to the increased difficulties and hindrances to army education in Ireland which had arisen out of the unsettled state of the country. I regret to state that those disturbing causes have in no appreciable degree been diminished during the last 12 months. I need not now trouble the Council with any recapitulation of the ways in which our schools have suffered from such a state of things, as I have already and on more than one occasion entered at length into the subject. I shall proceed, therefore, at once, in accordance with my usual custom, to lay before the Council in a statistical form such facts as appear to me to explain the present condition of military schools in Ireland, and to show what has been accomplished during the past year.

Number of men on school books in December 1869.

The number of men of all ranks on the school books in December 1869 were 3,680; of this total 206 were serjeants, 709 acting and full corporals, 310 drummers, and 2,375 privates.

For the corresponding period of the preceding year the numbers were 3,375, thus composed:—

Sergeants	268
Corporals	703
Drummers	390
Privates	2,014

There is no material discrepancy in these numbers, except as to serjeants and drummers, who appear to have fallen off to the extent of 62 and 80 respectively.

Average daily attendance.

The average daily attendance for December 1869 was 1,111, as against 1,527 in December 1868, or a decrease of 416. Considering that the register shows a nominal addition of 305, this diminution is striking and notable, and illustrates in a practical form the extent to which the education of adults has been arrested by the circumstances to which I have alluded.

The daily average attendance of 1,111 is equivalent to 30 per cent. of the number on the school books, and of this aggregate 100 were sergeants, 100 corporals, 590 drummers, and 320 privates.

The daily average for December 1868.

The daily average for December 1868 was made up as follows:—

Sergeants	8	per cent. of the number on the school books.
Corporals	22	,, ,, ,, ,,
Drummers	70	,, ,, ,, ,,
Privates	53	,, ,, ,, ,,

So that there has been a decrease as to corporals, drummers, and privates.

Number of men examined during the year 1869.

The number of men examined in my district, either by myself or by superintending schoolmasters, during the year 1869 were 1,424. The figures for the two previous years stand thus:—

In 1867	1,774
In 1868	2,096

App. II.

No. 4. Classification in the standards.

The 1,424 adults are thus classified in the three subjects to which our standards apply :—

Reading.

A.	432
B.	314
C.	268
D.	166
Over	96
Under	148
	1,424

Dictation.

A.	220
B.	213
C.	272
D.	260
Over	40
Under	419
	1,424

Arithmetic.

A.	85
B.	197
C.	182
D.	267
E.	219
Over	14
Under	460
	1,424

Per-centages.

Upon an analysis of these figures we find that of these 1,424 men 30 per cent. belong to A. and above A. in reading, 18 per cent. in dictation, and 36 per cent. in arithmetic. There has been an improvement since the previous year in respect to the two former of 2 per cent., and in respect to arithmetic of something a little less than 1 per cent.

Those below the standards are, in reading 10 per cent., in dictation 29 per cent., and in arithmetic 32 per cent., whereas in the examinations for 1868 it appeared that 15 per cent. were "below" in reading, 35 per cent. in dictation, and 37 per cent. in arithmetic.

Tables of progress.

The progress made in the three subjects of classification can be calculated as to 1,223 in dictation, as to 1,281 in writing, and as to 1,283 in arithmetic.

The figures stand thus :—

Dictation.

Great progress	95
Progress	766
Stationary	316
Gone back	46

Writing.

Great progress	78
Progress	903
Stationary	288
Gone back	12

Arithmetic.

Great progress	105
Progress	854
Stationary	287
Gone back	37

Per-centages.

It seems then that 67 per cent. have made great progress or progress in dictation, 76 per cent. in writing, and 74 per cent. in arithmetic.

Explanation of the number under the head of "Stationary."

The figures under the head of stationary may, I think, in general terms be described as representing that proportion of each adult school which has been most irregular in its attendance. As a matter of fact I have rarely had occasion to classify a soldier under this head, without finding on reference to register that from some cause or other he had been a frequent absentee from school, so that often a re-examination of such an one is rather a test as to how much he may have forgotten than as to how much he may have learned. There are, of course, adults whose intelligence and capacity are so far below par as to render their education a matter of extreme difficulty, if not absolutely impracticable; but this will be principally the case with old soldiers, and as a rule it will be safe to attribute the failure to improve rather to a want or neglect of opportunities than to any mental deficiency.

Childrens' schools.

I am glad to be able to write in favourable terms of the condition and prospects of the children's schools in my district.

The returns of progress which I shall presently produce are, I think, very satisfactory.

Number on books in December 1869, and average daily attendance.

The number of "grown children" on the books in December 1869 were —

Boys	441
Girls	386

or 827 in the aggregate.

The average daily attendance for that month was 690, consisting of 384 boys and 306 girls. This is 83·4 per cent. of the number on the registers.

Number on books in December 1868, and average daily attendance.

For purposes of comparison I give the figures of the previous year.

Number on the books	812
Average daily attendance	600

or 73 per cent of the former.

Number of children examined, and their classification.

The number of children examined in the past year was 632, as against 679 in the year preceding. The classification is as follows :

Reading.

A.	97
B.	114
C.	151
D.	166
Over	27
Under	77
	632

App. II. No. 4.

Dictation.

A.	63
B.	74
C.	86
D.	148
Over	14
Under	247
	632

Arithmetic.

A.	27
B.	53
C.	56
D.	70
E.	122
Over	19
Under	285
	632

So that the attainments of these 632 children may thus be tabulated —

Reading.

Per-centages.

A. B., and above A - 37 per cent.

Dictation.

A. B., and above A. - 23 per cent.

Arithmetic.

A. B., and above A. - 15 per cent.

The numbers below the standards are, in

Reading	10 per cent.
Dictation	39 per cent.
Arithmetic	45 per cent.

Tables of progress.

Subjoined are the tables of progress which refer to 486 children :—*

Dictation.

Great progress	89
Progress	319
Stationary	75
Gone back	3
	486

Writing.

Great progress	115
Progress	360
Stationary	59
Gone back	2

* *Note by the Council.*—It would appear that in Writing and Arithmetic 536 children are included.

Arithmetic.

Great progress	77
Progress	373
Stationary	76
Gone back	10

The above tables bear the following per centages:—

Dictation.

"Great Progress" or "Progress"	88 per cent.
Writing	98 „
Arithmetic	92 „

which I consider a most gratifying return.

Infant schools.

The number of infants on the school books in December 1869 were 995, composed of 481 boys and 514 girls. The average daily attendance for that month was 755 or 75 per cent. of the number on the registers. This attendance of infants falls somewhat short proportionably of that of the "grown children;" but this is to be ascribed to the former being younger, more liable to ailments of different kinds, and to being kept at home in inclement weather.

The system. Still an insufficiency of accommodation.

The infant school system is in my opinion well adapted for the purposes for which it was established. The insufficiency of the accommodation provided for infant schools, to which I have frequently drawn attention, still continues to interfere wiih their discipline and efficiency.

Singing.

I have no improvement to record in the singing, which is still very moderate.

Industrial schools.

The industrial school system seems to work successfully. The materials are strong, plain, and useful, and are converted for the most part into articles of ordinary wearing apparel.

Conduct of schoolmasters and schoolmistresses.

The conduct of the schoolmasters and schoolmistresses in my district, during the past year, has been such as to merit my warm approval and commendation. As a class they appear to discharge their duties with ability and conscientiousness; and I think it may truly be averred that among the obstacles and difficulties which hamper the administration of military schools, no one can fairly include such as would arise either from a want of intellectual capacity or of moral character in their teachers.

Libraries, &c., &c.

I have nothing new to report as to the libraries, reading, and recreation rooms; the accommodation is still in many cases inadequate. In several stations the reading and recreation rooms are not distinct, of which arrangement the disadvantages are obvious. I observe with satisfaction that refreshment bars are more general and in greater request than formerly. This is in itself a hopeful indication that the soldier is learning to spend his hours of leisure in his barracks, and that he is being to some extent withdrawn from the many temptations and dangers of the streets and the public house.

I have, &c.

EDWD. A. VICARS.

The Secretary,
Council of Military Education.

App. II.
No. 4.

Return of Certificates awarded by Mr. Vicars in 1869.

Regiment or Corps in which Examination for Certificates was held from 1st January to 31st December 1869.	Number of the Certificates gained in the several Classes.			Total Certificates obtained in all the Classes.
	1st.	2nd.	3rd.	
1st Battalion Grenadier Guards -	—	8	17	25
2nd Dragoons - - -	—	9	9	18
6th Dragoon Guards - - -	25	14	18	57
44th Regiment - - -	2	12	15	29
54th „ - - -	1	15	11	27
72nd „ - - -	8	35	24	67
89th „ - - -	—	4	9	13
Royal Artillery - - -	2	18	44	64
Total of Certificates of several Classes - -	38	115	147	300
Total of unsuccessful Candidates - - -		84		84
Total of Candidates - -		384		384

Table showing the Number of Certificates in the several Classes obtained by different Ranks.

Class of Certificate.	Non-commissioned Officers, full and acting.	Privates, Gunners, and Drivers.	Trumpeters, Buglers, and Drummers.
1st - - -	8	30	—
2nd - - -	59	42	14
3rd - -	63	72	12
Total - -	130	144	26
Grand Total -		300	

Remarks.—84 candidates were disqualified, vizt., 30 non-commissioned officers, 44 privates, and 10 drummers.

Appendix II.—No. 5.

Report by Lieut.-Colonel Bellairs for 1868.

Sir, Gibraltar, February 8, 1869.

I have the honour to transmit for submission to the Council of Education the following general report on the regimental schools at this station for the past year.

1. My appointment as Local Inspector of Schools only dates from September last, the time of my arrival at Gibraltar in succession to Colonel Hugh Smith, C.B., deceased.

2. The garrison consists of the— Garrison.

15th Brigade, Royal Artillery;
3 Companies, Royal Engineers;
1 Battalion, 13th Regiment;
28th Regiment;
71st „
74th „
83rd „

Of these, the 74th arrived in February, the 28th and 71st Regiments in October last, relieving the 87th, 75th, and 2nd Battalion 15th Regiments, respectively.

3. I have recently inspected the schools of the garrison, and have already furnished detailed reports on each, with exception of that of the 71st Regiment, which had been inspected just prior to leaving Ireland. Annual inspection.

4. I had occasion to remark specially upon the general efficiency of the schools of the 1st Battalion 13th, and 83rd Regiments; the superior style of "reading" in the 83rd Regiment; the great progress made in arithmetic by the Royal Artillery; the unusually good singing of the children in the 1st Battalion 13th Regiment; and the excellent condition of the industrial school of the Royal Engineers—all in these respects above the average. Special remarks.

5. The attendance of the adults belonging to the ordinary class has been very irregular, and progress in consequence unsatisfactory, as must inevitably be the case in a garrison like this, where the various duties of guards, pickets, fatigues, working parties on public works, &c., probably press heavier on the soldier than at other stations. A few men manage to give a fair attendance in spite of the heavy duty, but the rest fail to do so for want of some inducement in the shape of exemption from parades or duties. Attendance.

The attendance of the children is satisfactory.

6. The number attending the special classes at the time of my inspections was but 57 out of a force of 4,500. If at a station like this one corps can form a special class, all could. Different regiments have done so here for years past. The great advantages attending the formation of these classes have been so repeatedly insisted on, that it is unnecessary for me to enlarge upon that subject. I may, however, point out that time has shown that neither persuasion, nor the evident good results arising from the introduction of the special class system, have been sufficient to induce all commanding officers to carry it out. The time has arrived now, I submit, when it is desirable that paragraph 454 of the Queen's Regulations should be altered, so as to render the formation of Special classes.

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a special class compulsory, so many men per company attending according to the circumstances in which a regiment may be placed, and at the discretion of the general officer commanding the district or station. Commanding officers not to discontinue or reduce the number attending, except under particular circumstances, which should be reported to the general officer.

School accommodation.

7. Infant schoolrooms have been recommended to be built near the married soldiers' huts at Windmill Hill, and at Europa. They will be included in future estimates. The Town Range Barracks also require a separate infant schoolroom.

Schoolmasters.

8. The schoolmasters have conducted themselves creditably, and their commanding officers in their reports speak favourably of them.

Schoolmistresses.

9. The same may be said of the schoolmistresses.

School assistants.

10. The school assistants are too frequently changed. If they are intelligent they are offered promotion on condition of giving up their school duties, and as a rule they naturally prefer the prospect of rising as non-commissioned officers to remaining stationary as school assistants.

Certificates.

11. 76 non-commissioned officers and men were examined for certificates; 20 of these failed, and four only passed for the same class certificates that they were already in possession of, leaving 52 successful.

From commanding officers not offering any special advantage to the possessors of certificates, the men do not evince sufficient interest in these examinations. As their promotion does not depend on their having certificates, they do not see any present advantage to be gained by them, and do not generally foresee their value in enabling them, when they quit the service, to obtain more readily situations requiring some educational qualifications. For want of some instruction to commanding officers, directing them to encourage their men to come forward to these examinations, and that the possessors of certificates should, as far as possible, be made available for promotion, too few compete for certificates to serve the purposes of promotion. I think the number might be increased materially by certificates being granted at the inspection examination, without obliging the men to undergo (what is often distasteful to them) a further special examination.

Classification.

12. The present system of classifying pupils appears to be somewhat arbitrary, and subject to variation according to the different ideas which may influence inspectors as to what entitles a pupil to be placed in a certain standard.

Were instructions given on this subject similar to those issued regarding school certificates, guidance would be afforded to the schoolmasters and inspectors in making their examinations, and the classification resulting would prove more trustworthy and less variable than at present; also, certificates could be granted at the ordinary inspection examinations without the necessity of pupils undergoing further special examination, taking up the time of all, and rather calculated to deter candidates from coming forward. The attainments required for a third-class certificate seem very similar to those for standard C., for a second-class like those for standard B., and for a first-class those for standard A., with the addition of certain extra subjects.

Night schools.

13. Night schools have been established in some regiments with success. With the artillery they are especially useful, the men's duties employing them so much by day. Detachment night schools have also been opened on account of the scattered state of this corps, and the men cannot fail to derive great benefit from Colonel Maberly's exertions in this respect.

There have been some difficulties in obtaining the means of lighting these schools. I strongly recommend that every encouragement should be given towards keeping them up, and that sufficient light should be

furnished for the purpose, as well as extra supplies of school materials. There can be no doubt that these schools are exceedingly useful in a moral and educational point of view.

Lectures.

14. The lectures now being given by the schoolmasters (16 each during the season) are fairly attended.

Garrison libraries.

15. There are two garrison libraries at this station—one at the Casemate Barracks for the north district, and the other at the South Barracks for the south district. They are used merely as depôts from whence the books are issued periodically to the regimental libraries and recreation rooms once a quarter at present. These two libraries would, in my opinion, be much better amalgamated under one librarian, and placed in some central position, particularly as the rooms now appropriated for them are much required by the regiments occupying the barracks.

Recreation rooms.

16. The recreation room in the Casemate Barracks is an excellent one, and its management by the 83d Regiment is admirable in every way. Those belonging to the other corps are mostly barrack rooms devoted to this purpose.

This appropriation acts prejudicially on the soldiers, who are in consequence greatly overcrowded for want of proper space. Special recreation rooms to each barracks are much required.

School materials (black boards).

17. Instruction in savings bank accounts could be easier and better given were there in each schoolroom a black board painted so as to represent a savings bank book sheet. This has occasionally been done by regiments at their own expense, but as a corps only remains in a barrack a short time and cannot remove the boards so painted with them, I submit that the expense should be borne by the public, and that all schoolrooms should be supplied with such boards, or an allowance given towards having the painting executed.

Sponges.

18. It has been pointed out to me that the small sponge usually supplied to schoolmasters for black-board purposes is insufficient. I would suggest that regiments should be permitted to draw an allowance in lieu of this sponge. They could then supply themselves with a good duster, which would answer the purpose required better, or else, as sponge is cheap in the Mediterranean, buy double the quantity now supplied.

Schoolmasters' examinations.

19. In two instances the schoolmasters had not held any preliminary examination to my inspections, and in numerous cases I have found that pupils underwent their first examination by me.

I have pointed out to the schoolmasters, through their commanding officers, that section 10 of the fourth report on army schools conveys the instructions of the Council that the schoolmaster should hold an examination one month prior to that made by the inspector, and that it is desirable that their examination should be conducted by a wing at a time, as laid down in the report; also, that pupils should undergo their first examination within a month of their joining the schools.

I have, &c.,

W. Bellairs, Lieutenant-Colonel,
Local Inspector of Army Schools.

The Secretary
Council of Military Education.

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Appendix II.—No. 6.

Report by Lieut.-Colonel Bellairs for 1869.

Sir, Gibraltar, February 14, 1870.

I have the honour to transmit for submission to the Council of Education the following general report on the regimental schools at this station for the year 1869 :—

Corps in garrison.

1. The garrison has consisted of the same corps as mentioned in my last annual report, the only alteration being that of reduced establishments, viz. :—

15th Brigade Royal Artillery.
17th, 30th, and 31st Companies Royal Engineers.
1st Battalion 13th Regiment.
28th Regiment.
71st „
74th „
83d „

Annual examination reports.

2. The detailed reports connected with my recent annual examination of the schools of these corps have been already forwarded for the information of the Council.

State of schools generally.

3. It will be seen by these that the adult and grown children's schools of the 1st battalion 13th and 83d Regiments maintain their superior general efficiency, and that those of the 74th Regiment, mainly through the ability and exertions of their master, appointed during the year, have reached an equal degree of efficiency. The infant schools of the 1st battalion 13th, 28th, and 83d Regiments are deserving of special mention as being in a very satisfactory state. The industrial school of the Royal Engineers continues the best in the garrison. The different schools of the other corps have shown progress, and may be pronounced to be in a greater state of efficiency than a year since.

Attendance of ordinary classes.

4. The attendance of the ordinary classes is still unsatisfactory, arising from the same causes that have been so frequently explained—the various heavy duties incidental to a garrison like this.

Many men who give but desultory attendance are uselessly retained on the school books of some corps, thus tending in minor ways to fritter away the schoolmaster's time. I am disposed to think that this indulgence does not encourage or attract men to school, and that better attendance would be insured were all such men, giving less than an average attendance of twice a week, struck off the register. A regulation enforcing some restriction on this head seems to be required, as experience has shown that generally when left solely to the discretion of commanding officers nothing is done to remedy the evil. In some cases it may not, perhaps, be sufficiently understood that with regimental schools a large number of pupils on the books is no criterion of progress; on the contrary, it may be accepted as the rule that, beyond a certain number, the greater the excess the less efficient the school. There is more real progress with good attendance from a few than with an intermitting attendance from many. It may be mentioned that the desire to retain the services of an extra assistant who otherwise might have to return to his duty is, perhaps, sometimes the cause of names being kept on the register notwithstanding irregular attendance.

Attendance of special classes.

5. The attendance of the special classes has been unequal, the Royal Artillery and 74th averaging nearly 80 hours each man a month, while in other corps it has ranged from 25 to 50 hours only. The attention of commanding officers of the latter regiments has been called

to this, in the hope that they may be induced to enforce the stricter and better rules carried out in the Royal Artillery and 74th Regiment.

6. The attendance of the children has been generally satisfactory, taking into consideration that the soldiers' married quarters are often detached and distant from the schools. Attendance of children.

During the hot summer months the hours for attendance with corps having married soldiers' quarters at a distance were with advantage altered, so as to give with a short interval four hours before the children's dinner, and dispensing with the afternoon attendance. The children were thus saved from double trips backwards and forwards during the hottest part of the day, and from probable illness as a consequence. Besides that the children benefited in health, a better attendance was secured, and more real progress made.

Had the children been dismissed at an earlier hour to attend again in the afternoon, they would inevitably have returned fagged from the great heat and glare at a period of the day when even the soldiers are as much as possible kept under shelter, and the attendance would have fallen off, and the progress have become less satisfactory. With such young children it may, I think, be doubted if in warm climates the afternoon attendance is of any benefit.

7. It is probably very desirable that every soldier requiring it should be educated to a certain standard, and that attendance should be made compulsory towards that end. The qualification to ensure dismissal from school would, perhaps, be much the same as now required for a third-class certificate, certainly not of a very high character, and about as low as could well be selected. But constituted as many corps now are, some of a lower status of education than others, even such a required qualification would soon have the effect of crowding the school with men who never would pass the necessary examination to ensure dismissal. It would be destructive to the efficiency of the school, and impede more qualified pupils passing through it, were these men kept on the register beyond a specified period, or beyond the time when it had become evident that no progress could be expected from them. Compulsory attendance.

Compulsory attendance will not alone ensure a man learning anything. Unless a man himself is willing, and exerts himself to learn, nothing will be gained by keeping him at school.

In carrying out any scheme of compulsory attendance care should, I think, be taken not to commence too early in a soldier's career, or until he has acquired his drill and has become accustomed to his new life and duties. By then he will have become disciplined, be much more amenable to receive instruction, and be better able to estimate the advantages likely to result from passing through the school. For these reasons it would be well to wait until the first year's service was over before obliging soldiers to attend, and then to pass them through the school in special classes of a manageable number.

The practice of causing large numbers of young soldiers to attend school because they happen to have recently joined the corps must act prejudicially to the discipline and efficiency of the school, as the master and his assistants are rarely equal to the influx of so much raw material. I have seen compulsory attendance carried out in this erroneous fashion, and, as might have been expected, it has only resulted in failure and disappointment to all concerned.

8. My own observations of the indifferent results arising from the irregular attendance of ordinary classes, confirmed by the unfavourable reports made on the same subject for many years past by the assistant inspectors, lead me to the conclusion that the sooner the ordinary class under the present system is done away with, and a scheme of compulsory attendance organized on the special class model in lieu thereof, the Ordinary classes should be abolished.

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better for the educational prospects of the army. It would rarely happen that a special class, more or less modified, according to circumstances, as to exemptions from duties, could not be formed, if an adult school could be opened at all.

It would be far better for the interests of the school that the whole energies and attention of the master should be devoted to a small class of pupils attending regularly five hours daily, who would then be rapidly brought up to the necessary standard, and being dismissed school would be succeeded by another batch, than that his instructions and time should be wasted on many pupils giving only fitful attendance.

Schoolmasters' examinations.

9. The half-yearly examinations carried out by the schoolmasters seem to me of doubtful value. For days the regular school work is generally interrupted, and the master's time taken up, in order to furnish a few statistics which are supposed, often erroneously, I think, to give an insight into the state and progress of the school. It may be that for the children's school such an examination may be of benefit, and, as there are few or no absentees, it can be carried out without great difficulty in one day. But, as regards the adult schools, I submit that these examinations might be advantageously dispensed with. A much truer test of the efficiency of these schools would be afforded by a report showing the number of men passed through the special classes during the year, and the proportion of these who obtained certificates.

Certificates.

10. I had the honour to transmit on the 28th August last reports from commanding officers on the subject of army school certificates, called for by your letter of the 12th August last, and I availed myself of that opportunity to state my views on the same head. I then pointed out that commanding officers in this garrison seemed to be generally agreed as to the advantages arising from the formation of the special classes, that since my previous annual report considerable progress had been made in carrying out that system and enforcing examinations for promotion, that every regiment had its special class, and made the possession of certificates obligatory for the purposes of promotion. In some corps the army school certificate had been adopted, and in others a regimental standard of a similar character. This improved condition continues.

I also expressed an opinion that the time had now arrived when it was desirable to make the formation of special classes compulsory, and to enforce, under certain restrictions, the possession of army school certificates for promotion.

I may add here that one reason why commanding officers often prefer adopting a certificate of their own is, that they can carry out an examination at any moment, instead of having to wait until the assistant inspector holds his. At times, according to circumstances, great changes take place in the ranks of non-commissioned officers, and new men are required to fill the vacancies at once. It appears to me that General Order No. 7, Schools, 1870, will scarcely meet this requirement, and that consequently commanding officers will still usually prefer to ignore the army school certificate and to adhere to their own. The good results arising from forming additional special classes and carrying out that system more strictly, and from the encouragement given by some commanding officers, 15th Brigade Royal Artillery, 28th, and 74th Regiments, to men taking up army school certificates, may be seen in the increased number of certificates granted during the past as compared with the previous year, viz., 275 against 52. The candidates who failed were about 36 per cent. With the exception of a few all the men were examined at special examinations held about every three months for the purpose.

Certificates for children.

11. Commanding officers have, on my recommendation, granted certificates to a few children who were able to pass the necessary examination. This has been greatly appreciated, not only by the children them-

selves, but also, I am told, by their parents, and is a step I think well calculated to give an impetus to study in the grown children's schools. The schoolmasters will endeavour to bring forward their pupils for such prizes, the children will vie with each other to obtain them, and the parents will doubtless stimulate the more backward ones to exert themselves.

Night and detachment schools.

12. Night schools are working with advantage in the Royal Artillery and the 71st and 74th Regiments, the average attendance respectively each evening being 53, 24, and 38. The fact of so many men voluntarily spending their evenings in this way is evidence of the increased desire for self-improvement that has sprung up in this garrison, and shows that these night schools act as powerful moral agencies which are consequently deserving of every encouragement. The establishment of these schools also evinces the increasing interest taken by commanding officers in the improvement of their men, and shows that they are well aided by their schoolmasters and assistants in furthering this object.

The Royal Artillery and 71st Regiment have detachment schools at Europa. The former also have night schools in five different detached batteries.

Lectures.

13. Lectures, combined with the magic lantern, are being occasionally given by some of the schoolmasters. Readings by officers and non-commissioned officers are also carried out in some corps. The latter form of entertainment is probably the more popular, and perhaps as instructive.

Few men can lecture well, and unless a schoolmaster has this rare gift it seems a pity that his time and energies should be devoted to preparing an indifferent lecture. In regiments having night schools the schoolmasters have been unable to take their share of delivering lectures.

School accommodation.

14. The school accommodation of this station has been increased during the past year by a new building erected for the adults of the wing of the regiment quartered at Europa.

The more pressing want now is separate accommodation for the infant school of the regiment occupying the Town Range barracks.

Garrison libraries.

15. The garrison libraries continue in the same rooms in the casemate and south barracks, forming depôts for issuing books to the north and south districts. A small supply of fuel has been authorized during the wet months, to prevent damage to the books from damp.

Recreation rooms.

16. The recreation rooms accommodation remained the same during the past as in the previous year, being, with exception of that in the casemate barracks, converted barrack rooms, which properly should be occupied, and are much required for the men.

Special accommodation is, however, being provided for the companies of the Royal Engineers by the erection of a suitable building by Hargraves Barracks, and for the regiment occupying Town Range and Wellington Front barracks by the conversion of a store building by the Town Range barracks. It is also intended to erect a building for the purpose at the Moorish castle for the use of the Royal Artillery.

School regulations.

17. There is a great want of a manual of school regulations for ready reference. At present the rules for the guidance of schools are much scattered, and many portions are to be found only as hints, suggestions, and recommendations contained in the different reports on army schools published from time to time by the Council. These reports, after being read by commanding officers, are, as may be expected, soon put aside and forgotten. It would lead to great convenience as well as efficiency in the working of schools were all necessary regulations brought together in one small volume written in a clear, concise, and brief form.

18. It will be gathered from the foregoing paragraphs that there are many minor ways in which, according to my judgment, the schoolmaster's time is unwisely interfered with, and his attention distracted

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from what should be his legitimate work—the teaching of his pupils—which alone is quite sufficient to claim all his energies. Irregular attendance of pupils, schoolmasters' half-yearly examinations, delivery of lectures, filling in elaborate registers or returns, all perhaps tend more or less to occupy the schoolmaster's time. Another cause may be mentioned, indifferent assistants. There are not sufficient inducements for good assistants to remain for any length of time in the school, and generally, as soon as one has acquired in some degree the art of teaching, he is taken away for other duties and to be promoted.

W. Bellairs,
Lieut.-Col., Assistant Adjutant General, and L.I.A. Schools.

The Secretary,
Council of Military Education.

App. II. No. 7.

Appendix II.—No. 7.

Report by Lieut.-Colonel McCrea for 1868.

Sir,

Malta, January 25, 1869.

I am happy to state that the annual report on the education of the army in this command during the past year can testify to a generally increased interest taken by all classes with whom I have been thrown into communication on this important matter.

Without entering into details which in the separate reports of the examinations of regiments or corps have been already rendered to the Council, I would remark that generally while the attendance of the adults at the day schools has been irregular on account of the heavy duties of the garrison, there has been an increased wish on the part of the men to avail themselves of the advantage of evening and special classes, and that they have received support and encouragement in this both from schoolmasters and officers commanding.

The attendance of the grown children and infants has been generally regular, except in the extreme heat of summer. The time when progress is really made is during the cooler months of winter, when the climate here assimilates to that of the south-west of England. I regret, however, to add that this progress is checked by the want of warmth and comfort in the schools, no fuel being allowed for this purpose. Parents are naturally unwilling to permit the attendance of young children (often too scantily clad) in bad weather under such circumstances. I have not yet succeeded in prevailing upon the local authorities to concede this boon; but I have submitted in the proper quarter that where so much care and expense concerning army schools is now undertaken, it is a pity so trifling additional an expense should thus seriously check their advantages.

During the last ten years much improvement may be sensibly noticed in the social habits of soldiers and of their families, partly, I have no doubt, due to the general progress of education. Their wives and children have become more comfortable at home, better dressed and mannered abroad. The slatternly woman, so well known as typical of their position in life, is in many stations now the exception rather than the rule; while the appearance of the children at the Sunday schools would bear favourable comparison with that of our best country parishes. To the warm, unflagging interest taken by many wives of officers is due a large measure of this satisfactory change, and it therefore varies in regiments accordingly. And I may further add, that if the directions contained in order of 9th August 1867, concerning soldiers' marriages, be strictly carried out in future by officers commanding, this improvement in the class therein alluded to, assisted by the refinement necessarily produced by

training and education, will produce in a few years more a still greater marked and substantial amelioration of their social condition.

During the winter 1867-68 lectures and readings were numerous and varied. The latter especially, undertaken by the Royal Artillery, under the encouragement of the commanding officer, Colonel Goodenough, were very successful. They were delivered in the chapel school of the Barracca; and besides several hundred non-commissioned officers and men of the garrison, the delightful rendering of favourite passages of our best English authors by Lieutenant Harvey, R.A., and Captain Lewis, 1/8th Regiment, attracted a large audience of the principal inhabitants. H.E. the Governor and Lady Grant were among the number, an encouragement and appreciation of the efforts of these officers which could not fail to be understood by the men, or productive of a pleasant influence among them.

During the past year I examined and recommended for certificates 184 non-commissioned officers and privates, and I find the interest towards obtaining these marks of educational merit decidedly on the increase. In addition to the usual tests at the annual inspections, I hold quarterly examinations at which men of all regiments in the garrison are invited to compete together. This I believe puts a little more zest into the matter, arouses more general attention, and makes the men more than ever anxious to avoid failure. Generally I find they succeed very well as far as the second-class certificate, the schoolmasters having latterly taken more care in the instruction of saving banks and ledger accounts. But beyond that point few can go, the simplest questions in history and geography proving an insurmountable stumbling-block. The brain of man, when matured, appears to master well the details of minute fact, such as the study of arithmetic or engineering presents; but subjects of mere surface-holding must, to bear hereafter satisfactory results, be sprinkled over the memory when the mental soil is still soft and plastic. I should be glad to see especial reward attached to the gaining of the first class certificate, such as the addition of 1*d.* per diem to its holder while in the service, and a mention of the fact on a soldier's parchment certificate on discharge.

I would suggest, as an useful addition to the schools, that an inexpensive kind of globe might be given. It would much facilitate explanation to the elder children, and it is a point to which the schoolmasters have frequently drawn my attention.

An immense advance has this past year taken place in the singing of the children of several schools, to which no little *éclat* was given by the attendance of the glee classes at some of the inspection dinners, when the general officers expressed themselves much pleased at the effect. The children of the 10th brigade of the Royal Artillery, under the especial encouragement of Colonel Goodenough, have had great pains taken with their singing by Lieutenant Douglas, R.A., assisted by Mr. Compton the schoolmaster, with a result which when heard could hardly fail to be appreciated. I may venture to add that I much doubt if their performance could be excelled by children of equal age in any other place.

Another feature connected with the schools is the drilling of the boys for half an hour every morning on leaving the classes. This was introduced here by Lieut.-Colonel Hamilton, V.C., of the 64th regiment, and carried out by his schoolmaster, Mr. Murray, with an excellent result. The little soldiers drill and perform their miniature marching movements with admirable precision. The effect is very pleasing, and cannot fail to exercise an influence towards order and discipline in the after life of each of the young members thus early engaged in this martial pastime.

On the break up of the schools at Christmas each regiment gave a feast to its children, at which the ladies of the corps assisted. This, with

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the games which followed and toys distributed, was a source of keen pleasure to the young people. His Excellency the Governor was good enough to give for an afternoon a portion of one of the public gardens to the artillery for this purpose, and, on the invitation of Colonel and Mrs. Goodenough, to encourage the undertaking by his presence, accompanied by Lady Grant and many of their friends. He expressed himself much pleased with the glee singing of the children on this occasion.

There is also one thing more which, as connected with the elevation of the general moral tone of the service, may not be unfitly mentioned. One afternoon in each week the married women of the regiments in garrison are invited by a committee of ladies (wives of the officers, headed by Lady Grant and Mrs. Rich, the wife of Colonel Rich, C.B., Deputy Quartermaster General) to assemble for work and instruction. Materials of a neat, cheap, yet good quality, are bought wholesale in England; and the women, purchasing these by small weekly instalments, make up the garments on the spot, the cost in part being defrayed by a subscription among friends of the movement. During the work some instructive book is read out by the ladies present. I am aware that this is also in operation at other stations; and in Canada, from which the 10th Brigade came, it was most successful. Independently of the immediate gain in cheap, good clothes to some extent, the high influences thus directly brought to bear on wives and mothers of families of soldiers are, no doubt, the sources in part of the general improvement in tone and feeling to which I have before alluded.

It remains then, sir, only to submit these remarks to the consideration of your Council, in the hope they may be found to evince signs of an onward movement in the great work they have in hand. Of old it was written—

> ————-æqua lege necessitas
> Sortitur insignes et imos;
> Omne capax movet urna nomen.

But through the silent levers everywhere labouring to raise the mental culture of men and families who will again take their places among the people, whence they emerged to enter the service, may it not be said that a more equitable and gentle rule is gradually leading to that neutral ground where people of all grades may meet without distrust under the humanizing influences of a wide-spread education.

I have, &c.

R. B. McCrea,
Lieut.-Colonel.

The Secretary to the Council of Military Education.

Table showing the Number of Certificates obtained by Regiments serving in the Garrison of Malta, during the Year 1868.

Regiments.	1st Class.	2d Class.	3d Class.
Royal Artillery - - -	9	109	66
64th Regiment - - -			
30th " - - -			
1/8th " - - -			
1/24th " - - -			
87th " - - -			
		Total -	184

Appendix II.—No. 8.

App. II.
No. 8.

Report by Lieut.-Colonel McCrea for 1869.

Sir, Malta, Jan. 31st, 1870.

In compliance with the instructions of the Council of Military Education, I have the honour to submit the following remarks on the general state of education of the various branches of the service in this command for the past year.

Indeed I have but little to report that has not been in previous reports made known to the Council. The work of the schools is carried on with great regularity, and commanding officers take increasing interest in securing to their men the great advantages thus offered, whenever duty will permit. By changes in the armament of this fortress, consequent on late modern inventions, I think it not improbable that the heavy routine duties of this garrison may at no distant date be lightened, resulting naturally in an increased attendance at the regimental schools. The schoolmasters are a zealous, painstaking class of men, very anxious to see their pupils take a high standard in the examinations. It is clear by many outward signs that rudimentary education is making its mark more visibly each year on the morale and condition of the service. Among other tokens we see it by the anxiety of the men to obtain certificates; by the large daily attendance at the recreation rooms; by the demand for new books at the libraries; and by the interest shown by the men in the intellectual amusements started on their behalf in various ways by the officers of the garrison, either regimentally or collectively.

I do not wish to enter comparisons between the regiments, their acquirements, or successes; but I may point out a few items which especially invited attention in passing round from one regiment to another. The superior quality of the arithmetical examinations in the 87th Royal Irish Fusileers was very marked; while the needlework of the girls of the 64th regiment, and the admirable drill of the boys, far surpassed all other similar efforts elsewhere. To these I must add the generally superior advancement of the grown children of the Royal Engineer School; and the singing of the Royal Artillery classes at St. Elmo under the able and incessant encouragement of Lieutenant Douglas, R.A., and Mr. Compton, the schoolmaster. This eclipses everything of the kind which I have ever heard before in the service, and is listened to with pleasure by the officers on guest nights after mess. As a general rule I think that it happens that excellence is likely to be attained in that specialité for which the commanding officer, or his wife, or some one of the most influential persons of the regiment, may have shown a decided preference. The tone, bearing, and dress of the children in which a lady or ladies of the regiment show an interest, is decidedly marked.

The comfort of the school-rooms has also a decided influence on the matter, as well as the distance of the schools from the married quarters of the regiment. It is I consider an important point that school-rooms should be as close as possible to the barracks, if not within the walls. At Lower St. Elmo, as I have noted in the remarks on the examination reports, the school-rooms are dark, comfortless, and uninviting; and the infant school at the Upper St. Elmo is far too small for the purpose. I have pointed out in former reports the advisability of making the school-rooms comfortable, I might say habitable, in winter with a fire. Winter is the principal time for work here, so that for want of this a large per-centage of otherwise well-directed labour is probably of no effect.

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I have remarked during the examinations of different regiments that instruction in history and geography does not form a sufficiently important item in the classes of the grown children; and I have impressed upon the schoolmasters the advantage which may be gained by always making the reading lessons a medium for this instruction. When once the man has grown up without some rudimentary knowledge of these essential points of civilized life, they are most difficult to acquire; while this ignorance forms the chief stumbling block towards taking out first-class certificates. This, however, is not of so much importance compared to the fact that this ignorance in a great measure deprives men from enjoying the advantages now so largely afforded by works of travel in the libraries, and much narrows the interest taken in the events now crowded together in the daily papers. This interest once gained is never lost in life, but increases as years pass by and experience ripens; until as age descends a fund of blessings is stored up by memory which without some primary intelligence in these subjects would never have been acquired.

The return of certificates for the past year is attached to this report, and though a large number of men have submitted themselves for these examinations, the number would probably have even been larger if some uniform rule establishing their value were published throughout the service. In one regiment, for instance, they are considered an absolute necessity towards promotion; in another they are not regarded at all, but the commanding officer holds an examination of his own; in a third they are used up to the rank of serjeant, the first-class certificate being thought of less importance. I am of opinion that it might be well to abolish the examinations for the two lower classes of certificates, leaving commanding officers to make their own examinations for promotions, for which the instructions will be a sufficient guide; and placing the first-class certificate on a higher footing, to be competed for at open periodical examinations; the successful candidates, limited in number, to be rewarded in some small but substantial way. And further it would be well if these certificates, thus gained in competition during service, should form a positive assisting passport to government employment after quitting the service. Some scheme such as this would, I submit, give an enduring impetus to the education of our men—an impetus, where so much is done by routine, which is much required.

A great deal of good work has been done towards the employment and entertainment of the men of an evening in regimental concerts, theatricals, and readings. In this the 48th Regiment is conspicuous for its exertions. Last winter (68–69), by a misunderstanding connected with the Baracca Chapel School, already explained to the Council, the garrison "Readings from English Authors, with Selections of Music," which in the former year had proved so successful, did not take place. They have been resumed this winter under the especial patronage of H.E. the Lieutenant-General commanding. Above 600 non-commissioned officers and men attended the first, which was also encouraged by the presence of Sir Patrick and Lady Grant, Vice-Admiral and Lady Milne, and 200 of the principal people of the place. I attach some importance to the latter fact, as doubtless if soldiers see the amusement provided for their gratification is sufficiently good for their superiors as well, whose attendance gives a higher tone to the entertainments in all respects, the efforts of their officers in this respect cannot fail to be by them more highly appreciated, and inducive of higher pleasures than those most generally sought after.

Lectures upon professional subjects to both officers and men have also been instituted under the sanction and active assistance of the Lieutenant-

General commanding. The first series, upon Field Fortification, have already been delivered by Captain Durnford, of the Royal Engineers, in the presence of Sir Patrick Grant and the whole of his staff. The attendance of men and officers was not, however, encouraging, though the lectures were in detail interesting, well delivered, and profusely illustrated. The truth appears to be, that after the day's work is over men will gladly accept instruction combined with amusement, but not the dry abstract facts unalloyed by the geniality of the lighter matter. It had also been arranged that a series of lectures should be given on astronomy, illustrated by the magic lantern; but owing to the deputy controller not having been able to purchase the necessary appliances here, as directed by the Council, these lectures, as is much to be regretted, have necessarily been abandoned. The popularity of the readings will, I hope, make some amends for this, and next winter we shall, I doubt not, have the deficiences of the lantern remedied.

I must not omit to add that a class on surveying has been formed under the instruction of Captain Smith, of the 87th Royal Irish Fusileers, an officer who has passed through the Staff College. With the sanction of the Lieutenant-General commanding a number of officers have been released from regimental duties for a certain time with this object in view. At the close of the season I shall request Captain Smith to give me a return of the results for the information of the Council.

On making my inspections of the different recreation rooms and libraries, it appeared to me that in many cases the prices charged by agents in London for newspapers and periodicals were higher than what they ought to be. As the literary publications taken in by the regiments of the service throughout the world are almost identical, I would suggest that it might be worth the while of some large agent in London to offer by circular to supply regiments at a contract rate. As the amount taken yearly is considerable, the advantage both to the regiments and the contractor might be worthy of consideration.

In concluding I would observe that the work done during the pas year towards the general improvement of non-commissioned officers and soldiers has not been inconsiderable, and has probably been the more satisfactory in this command from the fact that during the past year no regiments have left for other stations. I would respectfully add, that what in my judgment is required to render the system still more efficient and productive, is to supply an increased incentive towards improvement and diligence, such as prizes for children under proper rules, and a real value to be attached to the certificate of education, both while in the service and (other circumstances of course suiting as well) after discharge from the service has been taken.

I have, &c.
R. B. McCrea, Lieut.-Colonel, R.A.,
Local Inspector of Army Schools.

The Secretary to the Council of
Military Education.

Return of Certificates of Education taken in Malta during the year 1869.

1st Class.	2nd Class.	3rd Class.	Failed.	Total number examined.
5	102	156	210	473

App. II.

No. 9.

Appendix II.—No. 9.

Report by Superintending Schoolmaster Little for 1868.

Royal Artillery, 3rd Brigade.
K. Battalion, 4th Brigade Royal Engineers.
53rd Foot.
1/60th „
69th „
78th „
1/Rifle Brigade,
Royal Can. Rifles.

Sir, Head Quarters, Montreal, 14th May 1869.

I have the honour to forward, for the information of the Council of Military Education, the enclosed annual reports upon the schools in this command enumerated in the margin, under the supervision of superintending schoolmaster Mr. Little.

I have, &c.
John J. Bisset, Major General,
for Lieut.-General Commanding
in British North America.

The Secretary of the Council
of Military Education,
London, England.

Sir, Montreal, April 27th, 1869.

In presenting my reports upon the state and working of the Army Schools in the second military district, I feel it right to make a few remarks.

With the common classes of adults there has been almost no improvement. This is owing to their very desultory attendance. It must, however, be admitted that they do not take advantage of all the school opportunities which present themselves.

In compliance with a general order issued last October, special classes were formed in every corps and detachment in Canada, except in the Royal Artillery at Quebec, whose teacher was not looked upon as competent to instruct a class of this kind. In this district these classes displayed very marked evidence of progress. Men who could not read nor form a letter when the classes were opened have not only learnt to read, but also to write from dictation and work the simple rules of arithmetic. I append specimens taken from the school of the 78th regiment, and this evidence of rapid progress is not confined to that school. This, I think, offers an excellent opportunity to illustrate the benefits to be derived from special classes.

Attached are the opinions of Lieutenant-Colonels Fielden, 1/60, and Bagot, 69th regiment, on the utility of these classes. These commanding officers frequently visited the classes, addressed words of advice and encouragement to the pupils, which had the effect of creating emulation among them, and also served as an incentive to increased exertion on the part of the teachers. As both officers consider that a graduated measure of education should be a necessary qualification for promotion to the non-commissioned ranks, hence in these two corps men, who were heretofore quite unconcerned about their mental improvement, now not only attend school willingly, but spend most of their leisure time in the barrack rooms in study.

I examined 807 men. Of these, 89, or 11 per cent., could not read; 82 or 10 per cent. could read a little, but not well enough to gather the meaning; 229, or over 28 per cent., could not write easy words from dictation; 292, or 36 per cent., could not work simple multiplication and division; and they are all young soldiers who are thus so backward.

With respect to the grown children, of no school can I say that its scholars are really well advanced; their knowledge of geography, grammar, and arithmetic proved, on examination, to be limited and superficial. These schools, instead of increasing in proficiency, seem to recede. This is the prevailing impression left upon my mind.

In the infant schools instruction is confined to the mere elementary branches; the examination in these gave satisfactory results. In the industrial departments plain sewing, knitting, and darning are systematically taught, and with beneficial results. It is to be regretted that cutting out is still neglected in some of the schools.

In consequence of an infectious disease having attacked the children of the Royal Canadian Rifles attending the Cottages School, it was closed at the time of inspection. There is, therefore, no report of it.

Order, cleanliness, neatness, and discipline prevail in all the schools. The commanding officers express satisfaction with the schoolmasters and schoolmistresses, with their moral character and standing, with their qualifications, management, and mode of teaching.

I am, &c.
J. Little,
Superintending Schoolmaster.

Sir, Montreal, April 12, 1869.

The examination of the special class established in the battalion under my command during the past five winter months having been completed by Superintendent schoolmaster Little, I wish to bring this circumstance to the notice of Major-General Bisset; and I append a return showing the state of each man's education on the 16th November last and the improvement made during the time which has elapsed between that date and the 9th April instant.

I am of opinion that these "special classes" are of great advantage to the soldiers, and that they should be formed whenever the circumstanees of a battalion will admit of it, more particularly of course during the winter months. They induce habits of application, and often a desire for knowledge, though at first the soldier may have joined the class in order to escape other duties.

At the same time they afford convenient lists from which a commanding officer may select men fit for promotion.

I have every reason to be perfectly satisfied with the manner in which Schoolmaster Hebb, attached to the battalion, has conducted the instruction and superintendence of the class. The men make rapid progress under him, and appreciate his mode of treating them.

I have, &c.
R. J. Feilden, Lieut.-Colonel,
Commanding 1/60 R. Rifles.

The Brigade Major,
2nd Military District, Montreal.

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No. 9.

MEMORANDUM FOR SUPERINTENDING SCHOOLMASTER.

Montreal, April 10, 1869.

ON taking command of this regiment this year my attention was particularly drawn to the lamentable want of education prevailing among the non-commissioned officers. In some cases captains of companies complained that sergeants could not even write out the orders. A special class had previously to my taking command been established, of which I had taken regimental charge. The result of this class has been so successful that I intend as far as possible to keep a special class always at work. Captains of companies are instructed to draft into this class any young man who may appear to them likely to make a good non-commissioned officer. Great care is taken in watching their progress.

I have taken the amount of knowledge required by the second and third class certificates of education as the curriculum for sergeants and corporals before promotion. I hardly approve of pushing the system further for the colour sergeant, as it appears to me his is an appointment which is more dependent on personal qualities than on mere education.

I have adopted a regimental system of examination, and the result invariably appears in regimental orders. Great attention is paid to the education of recruits up to a certain point.

The result of all this has been most marvellous. I am credibly informed that every afternoon the barrack rooms are occupied by men learning to write, &c., and many come up for examination self-educated in this way without going to school at all. I hope next year to be able to tell the Council of Military Education that ignorance has ceased in the 69th Regiment. At present I certainly cannot say it.

GEO. BAGOT, Lieut.-Colonel,
Commanding 69th Regiment.

RETURN of CERTIFICATES of EDUCATION awarded by Superintending Schoolmaster LITTLE in Canada in 1868.

Regiments or Corps in which Examinations for Certificates were held from December 1867 to December 1868.	Number of Certificates obtained in the several Corps.			Total Certificates obtained in all the Classes.
	1st.	2nd.	3rd.	
Royal Artillery, 3rd Brigade -	7	21	38	66
1st Battalion, 16th Regiment -	—	1	11	12
1st Battalion, 60th Rifles - -	5	19	79	103
100th Regiment - - -	—	2	15	17
Royal Canadian Rifles - -	—	—	2	2
Total Certificates of the several Corps - -	12	43	145	200
Total unsuccessful Candidates - - - -	—	—	—	107
Total of Candidates examined	—	—	—	307

TABLE showing the NUMBER of CERTIFICATES in the several CLASSES obtained by different RANKS. APP. II. No. 9.

Class of Certificate.	Non-commissioned Officers, full and acting.	Privates, Gunners, and Drivers.	Trumpeters, Buglers, and Drummers.
1st - - -	8	4	—
2nd - - -	31	12	—
3rd - -	58	81	6
Total - -	97	97	6
Grand Total -	200		

Note.—The whole of the above certificates were obtained at special examinations.

APPENDIX II.—No. 10. APP. II. No. 10.

REPORT by SUPERINTENDING SCHOOLMASTER STOCKHAM for 1868.

SIR, Head Quarters, Montreal, 20th August 1869.

I HAVE the honour to forward, for the information of the Council of Military Education, the accompanying Report on the Schools of the First Military District, as received from Mr. S. Stockham, the Superintending Schoolmaster.

I have, &c.,
J. E THACKWELL,
Deputy Adjutant General,
for Lieut. General Commanding
in British North America.

The Secretary of the Council of Military Education, London, England.

SIR, Montreal, August 11th, 1869.

I HAVE the honour to forward, for the information of the Lieut. General commanding, and Council of Military Education, a report as to the working of the schools of the First Military District (Canada) since March 1868.

The inspection returns of the regimental and detachment schools as per margin were sent to the Brigade Major of that district on the 31st March 1869, with a request for their transmission to the Council.

F. and H Batteries, 4th Brigade, Royal Artillery, Toronto, Ontario.
E. Battery, ditto, London, Ontario.
13th Hussars, Toronto, Ontario.
29th Toronto, and London, Ontario.

Since my examination of the above-named date, four regiments have left the district, viz., 2/17th Regiment from Toronto, Ontario, for England; 53rd Regiment, from London, Ontario, for Quebec; 4/60th Rifles, from London, Ontario, for New Brunswick; and 69th Regiment, from Brantford, Ontario, for Montreal. Three stations, Brantford, Hamilton, and Stratford, have ceased to be such for the

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troops; and my examinations have been this year confined to the garrison of Toronto, Ontario, having the head-quarters of the 4th Brigade Royal Artillery, 13th Hussars head-quarters, and a wing of the 29th Regiment, and London, Ontario, together with two detachment schools, viz., E. Battery, 4th Brigade, Royal Artillery, and a wing of the 29th Regiment.

Condition of the schools.

The condition and working of the schools which came under my observation this year were much superior to those of former examinations, but this is a necessary consequence when schoolmasters and schoolmistresses are doing their duty.

Grown children's schools.

74 grown children were present at the examinations, out of 79 on the school books.

Religious instruction to ditto.

The religious instruction given before me has been satisfactory. The military chaplain, I am informed, gave directions to the schoolmasters as to the particular course of religious training they were to pursue weekly; added to carrying out his instructions, there have been different parts of the Old and New Testaments selected and taught by the teachers.

These lessons have been well explained by the teachers, and the children had an excellent knowledge of this vital part of instruction.

Secular instruction to ditto. Reading.

Last year the reading of the grown children was too fast and in a low tone of voice, particularly with the girls. On this point a great improvement has taken place; it is now clear, slow, and distinct in comparison. In some of the schools several of the children were still only reading the sequel to second book of lessons; this can be accounted for by the great number of infant children that have been sent to the master's schools.

In the 29th Regiment two classes had been received into the Master's, and in the 4th Brigade, Royal Artillery; several infant children had also joined. Some of the elder children, however, read from the 4th Lesson Book and Supplement to ditto.

Dictation.

The dictation has improved in all the schools. In my last report I stated that in most of the schools I examined the grown children were not sufficiently advanced to write answers on some of the subjects set them in their examination books. I am pleased to say that a good progress had been made in this branch, as in the 13th Hussars and 4th Brigade, Royal Artillery, many were able to write answers this year to questions I gave them in English History and geography. In the 29th Regiment several of the elder children have made a considerable progress in dictation, but as yet could not write their answers.

Writing.

I have seen several good specimens of handwriting, a point to be particularly watched, as writing the answers, &c. sometimes induces a quick, unintelligible style.

Arithmetic.

The greatest improvement in the different subjects taught has been made in arithmetic. The elder children appeared well acquainted with nearly all the subjects enumerated in standard B, and the junior classes worked thoroughly the rules in which they were. I can report all well grounded in their tables, particularly in weights and measures, and I attribute the improvement in their knowledge of arithmetic to their having been obliged to learn their tables well before they were pushed forward. This subject was not taught so well previously.

English Grammar.

The grown children were acquainted with the outlines of English grammar in all the schools having trained masters in my district. In the 13th Hussars and 4th Brigade, Royal Artillery, the elder children parsed some sentences very passably in their examination books.

These subjects had been taught in all the schools I visited. Almost all my questions were correctly answered in writing by the advanced classes. The whole of the children had been taught orally, and seemed quite conversant with the subjects in detail. I may say these branches were very good. English history and geography.

Singing was not as much taught in the grown children's schools as I could have wished. I think this is to be much regretted, as it is found a pleasing interlude to more severe study. I must mention that the children of the Church of England were instructed by the military chaplain and the adjutant of the 4th Brigade, Royal Artillery, Captain Sandham, in Church singing. Singing.

The attendance of the grown children has been regular, a very necessary and much called for improvement. Attendance.

The conduct and discipline of the grown children's schools in the Garrison of Toronto was good. At London, Ontario, it was not so satisfactory, but I gave the acting garrison schoolmaster directions as to the course I wished followed (he had only been a short time in charge of the schools at the period of my examination), and judging from the attention he had paid to the teaching, and other matters connected with it, I think my orders were fully carried out. Discipline.

Having visited the schools very constantly, I can report that the cleanliness and tidiness of the grown children, and their general appearance, was satisfactory. Tidiness and cleanliness.

I found the school registers for grown children cleanly and correctly kept, and I beg to report that time-tables were in all the schoolrooms; the subjects laid down in them were, I was told, strictly followed by the teachers. School registers and time-tables.

It has been suggested, that could some reward be given to the elder boys, it would prove a great incentive to learning. The elder girls receive this boon in the shape of some article of clothing made in the industrial school; but as the boys are not members of that school, the benefit does not extend to them. I have no doubt that the chance of a prize would make them more anxious to attend, and profit by the instructions they receive. Drummer and band boys I would also include in these rewards. Rewards to grown boys.

The infant schools had been very creditably managed, with one exception, and even concerning this I must qualify the disapproval by stating that the mistress was not trained, and had had very little experience in school management. The school to which I refer was that of the detachment in London, Ontario. Infant's schools.

The Bible lessons given before me were good and well-explained, with the exception before named. Religious instruction to ditto.

Reading, writing on slates and in copybooks, arithmetic, tables, object and moral lessons, had been taught in most of the infant schools. Some of the senior classes read well to me from "Simple Truths" and 1st Lesson Book, the remainder from McLeod's cards in a fair manner. I gave directions for the advanced children to be moved into the master's schools. I found a very great variation in arithmetical progress in the different schools. In some the first three rules were well known; in others, only the first, simple addition. I think this is a branch which should be grounded in the infant school. The object clock-face and ball-frame lessons were well taught. Singing was nominally taught, but not with much science or theory; still, it helped to amuse the infants, and prevented the school hours becoming tedious; therefore the effects were good, at least, in a practical, though not in a musical way. Secular instruction to ditto.

Both the grown and infant children had been allowed a quarter of an hour for out-school exercise; and the latter were taught swinging of arms and other exercises at school. The number of

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infant children present at my examinations were 91 out of 102 on the school books, which was satisfactory.

Industrial schools.

The industrial schools were in good order. The work made in each had been of a useful kind, viz., dresses, inside apparel, blouses, pinafores, &c., &c.

Attendance.

In some of the schools the attendances of the Infant and Industrial children during the winter was irregular. The great distance at which many lived from the barrack schools (particularly in the 29th Regiment) had been the cause. The infant and industrial children of the Royal Artillery lived in barracks at the New Fort, Toronto; accommodation having been found for the married people there. Attendance of those was regular.

Discipline.

The conduct and discipline of these schools were good; the children were quiet, and behaved themselves in a satisfactory manner.

Cleanliness and tidiness.

With one or two exceptions, I found the infant children clean and tidy in their appearance.

School registers and time-tables.

The infant and industrial school registers were properly kept, and time-tables were in each schoolroom.

Visitor's books.

With one circumstance I must acquaint the Council. In the Infant and Industrial schools there is no uniformity with regard to visitors' books; some few have them supplied by the schoolmasters, and where they are, they are of great service. Others have not been supplied (the supply, I am informed, not being obligatory on the masters); I would suggest the supplying them by authority, and having them correctly kept as in the master's school. Of course I would suggest other headings, as those in use for the grown children and adults are headed serjeants, corporals, drummers, and privates; but that change could be easily effected.

Adults' schools.

184 non-commissioned officers, drummers, and privates, were present out of 312 on the school books.

Instruction to ditto.

Reading, writing in copybooks, arithmetic, and tables, had been taught in these schools. Many of the men appeared to have made a steady improvement; there were, however, several below the standards of attainments. Dictation and arithmetic were well taught to the senior classes, and their reading was good.

Special clsases.

39 men have been attending the special classes of the 1st Military District; these have belonged to the 4th Brigade, Royal Artillery, and 29th Regiment. These classes were formed in November 1868, by order of the Lieut.-General Commanding, and dismissed in March and April this year. The 13th Hussars were unable to form one, and the Detachment, 29th Regiment, at London, Ontario, did not form one until February last. These classes, I think, continue to do much good; in fact the men attending them receive more education in a month than the ordinary classes would communicate in six. I wish they were more extended, and attended in larger numbers; the effects would soon be perceived.

Evening classes.

The voluntary evening classes formed by the schoolmasters at Toronto, were quite successful during the past winter. Schoolmaster W. Fryer, 4th Brigade, Royal Artillery, formed one consisting of 56 men. Schoolmaster Hy. Flood, 13th Hussars, one of 18 men. Schoolmaster P. Clarke, 29th Regiment, one also consisting of 16 men, and evening classes were established at London, Ontario, in the detachment schools. Independently of the subjects taught at the ordinary classes in the day, the study of English history and geography was successfully pursued at the evening schools. I have been present at these classes, and can report the successful manner in which they were conducted. Peculiar advantages present themselves in Canada for ensuring success in this kind of tuition;

for instance, the length of the winter evenings, the great distance of the barracks (especially at Toronto) from the town, and the severity of the weather, make the men, perhaps, more anxious to attend than they would be at home.

The conduct and attention of the adults had been excellent. I did not hear any complaints. Conduct and discipline.

I cannot report any improvement in the attendance of the adults, which in every regiment under my supervision has been most irregular. Duties, fatigues (more of a regimental than a garrison nature), and evening parades are, I am told, the cause of the evil. No doubt they do work against the interests of te schools, still a great point would be gained could some change take place, as it materially affects the purposes for which the schools were projected. I do not include the special classes in this charge of irregular attendance, and with those, progress can be fairly estimated and seen. Attendance.

Lieut.-Colonel Gleig, R.A., the Inspector of Schools, notices in the Fifth Report of the Council of Military Education, that the drummer and band boys are not so much advanced as formerly. This is true, but the reason can easily be made clear.

Formerly in nearly every regiment (the Guards especially) these boys attended school as regularly as the children; practising their instruments, and attending some few parades, formed the only excuse for non-attendance; as the former was generally managed it interfered but very little with their school duties, therefore the progress was in proportion. The young trumpeters of the 13th Hussars attend on the old principle, and their progress is proportionate.

Thirty-one school certificates were recommended this year to regiments in my district. Some of these candidates were men who had been rejected on former occasions. I am happy to say they were not discouraged, but tried again successfully. Were any tangible reward awaiting the winners I feel assured many more would compete, and with success. At present (I understand) they repeatedly ask the schoolmasters what real advantages will accrue to them in their possession. If even promotion partially depended on them all, as it does in some regiments, the advantageous results would soon be seen. In the 4th Brigade Royal Artillery very few would try at all for third-class certificates, but they have been generally successful competitors for first and second. I did not recommend many men for correct work in their examination books according to the instructions of the Council of Military Education in their Fourth Blue Book, page 18, as they sit so very closely at the annual examinations that one can hardly act fairly in so doing; whereas at a special examination for certificates it is different. The men are at a good distance from each other; a profound quiet reigns, and fair play in every way can be given. School certificates.

I found the adults' registers cleanly and correctly kept. Time tables were in each school room, both at Toronto and London, Ontario. School registers and time-tables.

The school accommodation of Toronto district has been sufficient, and the furniture supplied ample. School accommodation.

I am glad to remark that I have no occasion to say anything unfavourably of the schoolmasters and schoolmistresses; on the contrary, I have much to praise when I speak generally of their energy and zeal on every occasion connected with their school duties; and to individualise I will begin with schoolmaster W. Fryer, 4th Brigade Royal Artillery. He fully maintains the character given of him by Mr. Sargeaunt, the inspector for North Conduct of school masters and schoolmistresses.

App. II. No. 10.

Britain, when in charge of schools of the 7th Brigade Royal Artillery. Schoolmaster Hy. Flood, 13th Hussars, is very energetic, and his commanding officer reports most favorably on his conduct; and schoolmaster P. Clarke, 29th Regiment, has conducted his school very well indeed.

The schoolmistresses are painstaking, and as theirs is a situation in which great patience and trouble must be shown ere the slightest show of improvement is apparently made by the very juvenile pupil, I need only mention that a good many promotions to the upper schools have taken place during the year, and that circumstance will show that the duties are, I think, conscientiously fulfilled. Schoolmistress Fryer, 4th Brigade Royal Artillery, and schoolmistress H. Rowan, 29th Regiment, have been very painstaking with their schools. Acting schoolmistress Todd, 13th Hussars, has been the same.

School assistants.

I have not had any complaints against the school assistants. The schoolmasters have reported very well on their efficiency and good conduct.

There was only one monitress in the district (29th Regiment), and she appeared attentive to her duties.

I have now informed the Lieutenant General Commanding and Council of Military Education of all that has come under my observation during my examinations, and beg to say that in my humble opinion the army schools which have been in my district during the past year were on leaving it in as favourable a state as could be expected.

I also forward a return of school certificates, &c. recommended by me from December 1867 to December 1868.

I have, &c.,

Samuel N. Stockham,

Superintending Schoolmaster,

Canada.

The Deputy Adjutant General,
&c., &c., &c.
Montreal.

Return of Certificates, recommended by Superintending Schoolmaster S. N. Stockham, 1st Military District, Toronto, Ontario, Canada, from December 1867 to December 1868.

Regiments or Corps in which Examinations for Certificates were held from December 1867 to December 1868.	Numbers of Certificates obtained in the several Classes.			Total Certificates obtained in all the Classes.
	1st.	2nd.	3rd.	
F and H Batteries, 4th Brigade, Royal Artillery.	3	1	14	18
E Battery, ditto - - -	—	2	—	2
2/17th Regiment - - -	—	5	9	14
29th „ - - -	—	2	14	16
4/60th Rifles - - - -	2	2	11	15
53rd Regiment - - -	—	6	11	17
69th „ - - -	—	3	10	13
Total of Certificates of the several Classes - -	5	21	69	95
Total unsuccessful Candidates	1	37	17	55
Total of Candidates examined	6	58	86	150

TABLE showing the NUMBER of CERTIFICATES in the several CLASSES obtained by different RANKS. App. II. No. 10.

Class of Certificate.	Non-commissioned Officers, full and acting.	Privates, Gunners, and Drivers.	Trumpeters, Buglers, and Drummers.
1st - - -	3	1	1
2nd - -	11	9	1
3rd - -	46	23	—
Total - -	60	33	2
Grand Total -	95		

Note.—93 of the above received certificates at my periodical inspection, the remaining two candidates were specially examined.

Remarks.—Several of the candidates have belonged to the special classes.

A return of certificates awarded by Superintending Schoolmaster Stockham in 1869 was subsequently received. It includes 2 first class, 13 second class, and 22 third class certificates.

APPENDIX II.—No. 11. App. II. No. 11.

REPORT by CAPTAIN DUNN for 1868.

No. 437.

MY LORD, Head Quarters, Simla, September 8, 1868.

I HAVE the honour to forward for the information of His Royal Highness the Field Marshal Commander-in-Chief the accompanying letter, No. 648, dated the 17th ultimo, from the Superintendent of Army Schools in Bengal, together with 38 reports of schools inspected by that officer during the period from 1st December 1867 to the 15th June 1868 for transmission to the Council of Military Education.

2. Captain Dunn's remarks regarding insufficiency of school accommodation have in every case received attention.

3. The schoolmasters who have lost their appointments and been returned to the ranks for misconduct, referred to in paragraph 20 of Captain Dunn's letter, are Johnstone, Sealy, and Browne, regarding whom separate communications have already been addressed* to your Lordship for the information of His Royal Highness.

4. The untrained females appointed provisional schoolmistresses in Bengal this year, alluded to in Captain Dunn's letter, paragraph 18, are Mrs. Scott, Allen, and Davin, as previously reported to your Lordship.†

* Letters 334 of 9th July 1868; 365 of 28th July 1868; and 422 of 1st September 1868.
† Letters 53 of 11th July 1868; 371 of 1st August 1868; and 383 of 7th August 1868.

App. II. No. 11.

5. Referring to paragraph 19 of Captain Dunn's letter, my despatch, No. 409, of the 18th ultimo has informed His Royal Highness of the liberality of the Indian Government in authorizing the appointment of trained schoolmasters for artillery schools at stations in Bengal where there are two batteries quartered together.

I have, &c.

(Signed) W. R. Mansfield, General,
Commander-in-Chief in India.

The Adjutant-General of the Forces, Horse Guards, London.

The Adjutant-General, Army, Head Quarters, Simla.

No. 648. Office of Superintendent of Army Schools,
Kussowlie, August 17, 1868.

Sir,

I have the honour to submit for transmission to the Council of Military Education reports on 37 schools inspected by me during a tour extending from 1st December 1867 to 15th June 1868, with duplicates of the same, for the information of His Excellency the Commander-in-Chief, the return of which when done with is solicited. A copy of the report on each school has been sent to the officer commanding.

2. I would beg here to make my grateful acknowledgment of the kind consideration with which His Royal Highness the Field Marshal Commanding-in-Chief was pleased to receive the representation made by me in forwarding my last year's reports of the onerous duties which the inspection of the schools of so large a district entailed upon me, as communicated with your No. 3,776, of 6th May 1868; as, however, this correspondence did not reach me till my arrival at Peshawur, the extreme station visited by me, I was not able on this occasion to avail myself of the permission accorded by His Royal Highness to lessen the extent of my tour.

3. I was in hopes that I should have been able to submit these reports soon after my return to Kussowlie on the 15th June, but the unavoidable absence from office for some weeks of Mr. Purdon, Assistant Superintendent, on account of the dangerous illness of two members of his family, and the amount of correspondence accumulated during my absence demanding my immediate attention, have prevented my doing so.

4. I have on the present occasion few general remarks to offer in addition to the points brought forward in my last year's report; and as the report of the Council of Military Education for 1867 has not yet been received, I am not aware whether any of the matters alluded to in my last report have received the consideration of the Council.

Adults; numbers inspected.

5. It will be seen from the return accompanying this report that in the 37 schools visited, having a total attendance of 2,993 adult scholars, 1,897 were examined. I was unable to inspect the schools of 85th, 92nd, and 106th regiments, these schools not being in operation at the period of my visit to their stations. The Royal Artillery at Moultan was also without a school, in consequence of the want of a schoolmaster, but I assembled and examined the children.

Attendance.

6. The attendance of the great majority of adults, about 70 per cent. of the whole, continues to be compulsory. In three corps, the 20th Hussars, 1/6th, and 103rd regiments, the enforced attendance at school appeared to me to be carried to a point beyond which advantage could be expected. In the last-named regiment the system has been considerably modified since my visit. On the other

hand, I would particularize the 7th Hussars as having a good attendance entirely voluntary.

7. Of the total number of adults examined, the per-centages of those who have attained the various standards are below given. In arithmetic, as explained in my former reports, the numbers recorded under the several standards must be understood to include only those scholars who are able to work fairly and independently the rules in each standard. The numbers studying the higher rules would be considerably larger. Attainments.

	Reading.					Dictation.					Arithmetic.					
	A.	B.	C.	D.	Below.	A.	B.	C.	D.	Below.	A.	B.	C.	D.	E.	Below.
Per-centage in	21	28	21	13	14	11	21	17	21	28	2·7	8	16	15	15	42

The large per-centage in arithmetic below the lowest standard is in a measure attributable to the large number of uneducated men attending compulsorily in the three regiments referred to in paragraph 6, $\frac{7}{16}$ of the total number of scholars recorded as below the lowest standard being in these three regiments.

8. The knowledge of geography and history acquired by the adults is except in very few cases slight and desultory; nor can it well be otherwise until some plan is arranged which shall secure the regular attendance of all the scholars studying the subjects at the lessons given. Special subjects.

9. The per-centage of really good writers amongst the adults examined was 14. Good writers.

10. The half-yearly examinations have been much more regularly conducted since the date of my last report. In December last the examination was omitted only in five batteries of artillery, and in one regiment, except from unavoidable causes, such as the regiment or battery being on the march, or the absence of a schoolmaster. In a few instances, however, the examination books have not been properly preserved, having been transferred to different individuals, or in the case of batteries changing stations, not having been taken with the batteries, which has prevented my recording progress. In the case of the regiments noted in the margin, in inspecting which I was pushed for time, I inadvertently omitted to record the progress of the scholars not examined by me, which diminishes the number that ought to have been recorded by between 150 and 200. Of the total number of those whose progress was recorded the per-centages were as follows:— Half-yearly examinations and record of progress.

20th Hussars.
1/19th Regiment.
36th „
38th „
88th „

Reading.				Dictation.				Arithmetic.			
Great Progress.	Progress.	Stationary.	Retrograde.	Great Progress.	Progress.	Stationary.	Retrograde.	Great Progress.	Progress.	Stationary.	Retrograde.
1	54	43	·5	3	55	39	·8	1	38	59	·7

App. II.

No. 11.

Certificates of education-

11. The number of certificates recommended during my inspection were:—

For 1st Class.	For 2nd Class.	For 3rd Class.
7	48	141

but some of the schools had recently received examination papers from my office. The numbers recommended upon examinations conducted in my office during the year were as under:—

	For 1st Class.	For 2nd Class.	For 3rd Class.
Examined	16	100	77
Recommended	15	39	52
Rejected	1	61	25

Regimental accounts.

12. Regimental and savings-bank accounts are now generally taught in the schools, with exception of a few battery schools with acting schoolmasters in charge.

Special classes.

13. Special classes have been held in 33 schools during the past year, ending May 1868, but 12 only have been maintained throughout the year, the average number of months during which all have been maintained being seven. In the month of May there were 368 men attending special classes, and 218 attending on the average daily. I would particularly mention the 7th Hussars, 1/11th regiment, and 37th regiment, as having large and well-attended special classes.

Hindostani classes.

14. Hindostani classes have been held in 56 schools, and in 16 continuously throughout the year, the average number of months during which all have been maintained being $7\frac{1}{2}$. The average number on the roll in all the schools has been 7, and the daily average attendance $3\frac{1}{2}$. In the schools examined by me I found 119 men studying, of whom 4 had passed the first standard of examination, 30 were advancing towards the point for examination, and 85 were learning the language colloquially, or in the elementary stages of translating from the Oordoo character. I found the Moonshis in charge generally sufficiently qualified for their work.

Children; number examined and attainments.

15. The number of grown children examined by me was 418, out of a total attendance of 478. The per-centages of their attainments were as under:—

Reading.					Dictation.					Arithmetic.					
A.	B.	C.	D.	Below.	A.	B.	C.	D.	Below.	A.	B.	C.	D.	E.	Below.
11	18	21	24	24	5	14	17	23	39	2	7	8	10	17	54

Geography, English history, and grammar are generally taught to the elder children, with fair results.

Infants.

16. Of 676 infants attending the schools I saw about 540. I do not think it necsssary to specify their attainments. The infant schools still labour under the disadvantage of a want of sufficient and suitable accommodation and furniture, and this subject will be brought to the special notice of the Government of India. The want of pupil teachers in the place of monitresses, owing to the British army school regulations not having as yet been made applicable to this country, is also much felt.

Industrial classes.

17. The industrial classes are well attended and efficiently conducted.

Schoolmistresses appointed.

18. During the past year four schoolmistresses have been appointed from the normal school in this presidency, and three individuals (two acting schoolmistresses) have been appointed provisional schoolmistresses by his Excellency the Commander-in-Chief in India, subject to confirmation, without training.

Appointment of schoolmasters.

19. It is with much satisfaction that I refer to the appointment from England of two schoolmasters to Brigades of Artillery; all the brigades being now supplied with trained masters, with the exception of one, whose schoolmaster was invalided to England. The Government of India has sanctioned a schoolmaster for the Royal Artillery at Moultan, and it is hoped that the two remaining artillery commands, with two batteries each, will be likewise provided for, thus completing the requirement of this arm, except in regard to detached batteries, to which the appointment of trained schoolmasters cannot at present be anticipated.

Conduct of schoolmasters.

20. I regret to remark that two schoolmasters trained in India (one in Madras) have been reduced to the ranks by sentence of courts martial, and one provisional schoolmaster has been remanded to his regiment for misconduct. With these exceptions the conduct and qualifications of the schoolmasters in this presidency have been all that could be desired.

Lectures and magic lanterns.

21. I would beg to defer for a short time a report on lectures and magic lanterns, the control of which was transferred to me in November last by the order of his Excellency the Commander-in-Chief, not being as yet in possession of complete information on the subject.

Libraries.

22. As desired by the Council of Military Education, I have entered on the fourth page of form A. particulars regarding the libraries and reading rooms of the regiments visited.

Assistant superintendent of army schools.

23. I beg again to mention the valuable assistance afforded me in every branch of my office work by Mr. Purdon, (temporary) Assistant Superintendent of Army Schools, who has carried on the office duties during my absence, and on whom has devolved mainly the task of examining the papers of candidates for certificates.

I have, &c.
F. W. Dunn, Captain,
Superintendent of Army Schools.

Summary of Results of Inspection of Schools visited 1867-68.—Adults.

Schools inspected.	Number on Roll.			Present at Examination.	Attainments.																	
					Reading.					Dictation.						Arithmetic.						
	N.C. Officers.	Privates.	Total.		A.	B.	C.	D.	Below.	Above A.	A.	B.	C.	D.	Below.	Above A.	A.	B	C.	D.	E.	Below.
A. Brig. R.H.A.	77	35	112	77	28	22	4	13	10	—	13	25	7	10	22	—	2	5	13	16	13	28
F „ „	28	24	52	45	6	19	10	5	5	—	4	17	11	7	6	—	—	9	14	7	2	13
19th „ R.A.	52	5	57	43	18	19	6	—	—	1	10	17	11	4	—	—	4	5	16	6	7	5
22nd „ „	58	35	93	61	18	14	18	4	7	—	1	18	9	18	15	—	—	9	7	7	9	29
24th „ „	14	21	35	35	16	12	2	3	2	—	5	16	7	4	3	—	1	2	12	6	11	3
R.A. Rawulpindee	13	17	30	16	7	—	4	4	1	—	4	3	2	2	5	—	—	3	4	1	3	5
B/F R.H.A.	14	8	22	13	4	6	2	1	—	—	1	6	3	3	—	—	—	2	2	3	2	4
E/16 R.A.	23	18	41	23	9	6	4	1	3	—	5	9	1	2	6	—	2	1	4	3	4	9
G/16 „	12	—	12	10	7	1	2	—	—	—	4	4	—	2	—	—	—	1	7	—	1	1
A/19 „	9	16	25	14	2	4	2	3	3	—	—	2	6	—	6	—	—	—	1	1	3	9
G/19 „	16	6	22	17	4	7	5	1	—	—	—	10	3	3	1	—	—	2	4	3	4	4
B/22 „	15	33	48	28	12	5	5	4	2	—	7	4	6	5	6	—	1	1	5	4	4	13
7/22 „	8	22	30	16	—	9	3	2	2	—	—	7	1	4	4	—	—	2	3	1	1	9
6/24 (Govindghur)	12	37	49	31	5	15	4	4	3	—	2	5	6	7	11	—	—	1	2	7	7	14
2/25 R.A.	8	1	9	8	3	3	2	—	—	—	3	3	—	1	1	—	—	2	3	2	1	—
4/25 (Attock Gn.)	20	29	49	41	7	18	10	5	1	—	1	13	10	14	3	—	—	5	6	9	8	13

7th Hussars - - -	7	47	54	41	3	8	21	7	2	—	3	4	11	15	8	1	3	4	5	6	10	13
19th „ - - -	19	21	40	18	2	4	4	6	2	—	—	3	4	3	8	—	—	—	3	3	1	11
20th „ - - -	61	167	228	185	26	39	41	34	45	1	6	21	27	57	73	—	2	3	25	19	24	112
21st „ - - -	2	44	46	25	4	7	9	4	1	1	2	4	5	6	7	1	—	5	1	4	1	13
1/3rd Regiment - - -	68	44	112	55	27	13	5	3	7	1	15	14	5	5	15	—	2	12	13	6	4	18
1/5th „ - - -	56	25	81	67	10	25	18	12	2	1	8	17	15	24	2	—	4	5	14	20	17	7
1/6th „ - - -	4	213	217	156	3	20	45	35	53	—	1	7	14	21	113	—	1	—	—	15	14	126
1/7th „ - - -	22	2	24	23	15	6	2	—	—	—	4	7	8	1	3	—	—	—	8	4	7	4
2/12th „ - - -	61	66	127	94	31	37	16	4	6	9	12	23	27	15	8	1	6	23	26	17	11	10
1/19th „ - - -	78	105	183	116	23	29	26	20	18	—	11	20	22	32	31	—	1	10	15	18	16	56
36th „ - - -	59	45	104	62	28	22	5	4	3	—	19	26	7	6	4	—	1	10	11	22	7	11
38th „ - - -	59	70	129	62	18	12	11	12	9	3	10	16	3	14	16	2	3	5	8	4	11	29
41st „ - - -	75	77	152	61	2	14	17	8	20	—	1	10	11	13	26	—	—	3	9	7	8	34
77th „ - - -	40	43	83	60	14	25	16	2	3	—	7	12	17	17	7	—	3	9	19	11	5	13
79th „ Head Quarters	6	31	37	5	—	3	2	—	—	—	—	—	3	2	—	—	—	1	2	—	1	1
„ „ Wing - -	5	16	21	13	4	8	—	1	—	1	1	4	1	4	2	—	1	1	3	2	3	3
88th „ - - -	79	67	146	70	19	20	20	9	2	2	10	4	13	23	18	—	7	4	4	12	12	31
93rd „ - - -	8	29	37	30	5	11	7	4	3	—	2	9	7	5	7	—	—	2	7	7	1	13
103rd „ - - -	48	281	329	172	13	45	32	33	49	—	7	23	24	30	88	—	1	9	11	17	21	113
109th „ - - -	58	57	115	75	18	23	20	13	1	—	11	16	11	16	21	—	1	5	8	9	24	28
Murree Depôt - - -	27	15	42	29	5	12	9	1	2	—	3	13	6	6	1	—	1	1	7	8	6	6
Total - - -	1,221	1,772	2,993	1,897	416	543	409	262	267	20	193	412	324	401	547	4	47	162	302	287	284	811

SUMMARY of RESULTS of INSPECTION of SCHOOLS visited in 1867-68.—ADULTS—*continued.*

Schools inspected.	Good Writers.	Progress.													Scholars.		Certificates received.		
		Books examined.	Dictation.				Writing.				Arithmetic.				Voluntary.	Compulsory.	1st Class.	2nd Class.	3rd Class.
			G.	P.	S.	R.	G.	P.	S.	R.	G.	P.	S.	R.					
A. Brig. R.H.A.	16	76	4	57	15	—	11	52	13	—	—	45	30	1	13	99	1	1	2
F. „ „	11	29	—	18	11	—	1	15	13	—	1	10	18	—	20	32	—	2	7
19th „ R.A.	17	12	—	7	5	—	—	8	4	—	—	7	5	—	5	52	—	1	12
22nd „ „	8	—	—	—	—	—	—	—	—	—	—	—	—	—	8	85	1	4	3
24th „ „	not noted	23	—	9	14	—	—	16	7	—	—	12	11	—	2	33	—	—	7
R.A. Rawulpindee	5	4	—	4	—	—	—	4	—	—	—	1	3	—	17	13	—	—	5
B/F R.H.A.	1	15	—	7	8	—	—	8	7	—	—	8	7	—	17	5	—	—	1
E/16 R.A.	7	—	—	—	—	—	—	—	—	—	—	—	—	—	15	26	—	—	1
G/16 „	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12	—	—	—
A/19 „	1	11	1	7	3	—	—	4	7	—	—	2	9	—	—	25	—	—	—
G/19 „	2	—	—	—	—	—	—	—	—	—	—	—	—	—	6	16	—	2	—
B/22 „	9	8	—	3	5	—	—	4	3	1	—	—	7	1	5	43	—	—	—
7/22 „	4	—	—	—	—	—	—	—	—	—	—	—	—	—	12	18	—	—	2
6/24 (Govindghur)	1	—	—	—	—	—	—	—	—	—	—	—	—	—	40	9	—	—	1
2/25 R.A.	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	—	—	1
4/25 (Attock Gn.)	6	12	—	6	6	—	—	7	5	—	—	5	7	—	26	23	—	1	4

7th Hussars	8	14	—	10	4	—	—	12	2	—	—	5	9	—	54	—	—	—	3
19th „	2	15	—	5	10	—	—	8	7	—	—	1	14	—	23	17	—	—	3
20th „	15	181	2	80	98	1	2	79	99	1	1	55	124	1	10	218	—	1	14
21st „	5	5	—	4	1	—	—	4	1	—	—	2	3	—	46	—	—	—	—
1/3rd Regiment	8	65	—	22	40	3	3	38	22	2	1	27	37	—	7	105	—	4	3
1/5th „	9	63	—	45	18	—	—	38	25	—	1	33	27	2	16	65	—	3	8
1/6th „	5	—	—	—	—	—	—	—	—	—	—	—	—	—	18	199	—	—	—
1/7th „	6	12	—	8	4	—	1	5	5	1	2	2	7	1	2	22	—	—	—
2/12th „	26	61	1	33	27	—	10	38	12	1	—	21	39	1	54	73	—	15	35
1/19th „	4	78	—	35	42	1	—	34	43	1	—	13	65	—	162	21	—	—	—
36th „	15	25	1	17	7	—	2	17	6	—	—	14	11	—	45	59	1	3	3
38th „	13	26	—	9	17	—	—	12	14	—	—	11	15	—	1	128	1	—	—
41st „	6	77	1	44	32	—	1	43	32	1	—	35	42	—	50	102	1	4	7
77th „	11	45	2	27	16	—	3	29	13	—	4	23	18	—	43	40	—	1	10
79th „ Head Quarters	—	7	1	5	1	—	—	5	2	—	1	1	5	—	37	—	—	—	—
„ „ Wing	2	—	—	—	—	—	—	—	—	—	—	—	—	—	21	—	—	1	—
88th „	12	44	1	34	9	—	1	27	16	—	—	16	28	—	73	73	2	1	2
93rd „	—	5	—	4	1	—	—	3	2	—	—	4	1	—	37	—	—	1	—
103rd „	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	329	—	3	3
109th „	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	115	—	—	3
Murree Depôt	6	—	—	—	—	—	—	—	—	—	—	—	—	—	15	27	—	—	5
Total	270	913	14	500	394	5	35	510	360	8	11	353	542	7	900	2,093	7	48	141

Summary of Results of Inspection of Schools visited in 1867–68.—Children.

Schools examined.	Number on Roll.			Present at Examination.	Attainments.																	
					Reading.					Dictation.						Arithmetic.						
	Boys.	Girls.	Total.		A.	B.	C.	D.	Below.	Above A.	A.	B.	C.	D.	Below.	Above A.	A.	B.	C.	D.	E.	Below.
A. Brigade, Meerut	8	6	14	13	3	2	1	6	1	—	2	1	2	1	7	—	—	2	2	1	—	8
F. „ Umballa	4	5	9	8	—	—	2	2	4	—	—	—	3	1	4	—	—	—	—	3	1	4
19th „ R.A., Peshawur	8	4	12	9	—	2	3	—	4	—	—	3	1	1	4	—	—	—	1	1	1	6
22nd „ „ Morar	10	9	19	18	1	2	—	7	8	—	—	1	2	—	15	—	—	—	1	2	—	15
24th „ „ Lahore	2	12	14	12	—	3	6	2	1	—	—	3	1	5	3	—	—	—	—	1	2	9
R. A., Rawulpindee	4	4	8	7	2	2	1	2	—	—	—	1	3	1	2	—	—	—	1	—	2	4
B/F, R. H. A.	1	—	1	1	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1
E/16, R. A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
G/16 „	1	—	1	1	1	—	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—
A/19 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
G/19 „	1	1	2	2	—	1	—	1	—	—	—	1	—	1	—	—	—	—	1	—	—	1
B/22 „	8	4	12	10	2	4	2	1	1	1	1	—	3	5	—	—	2	1	1	—	1	5
7/22 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6/24 (Garrison, Govindghur)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2/25, R. A.	3	—	3	3	—	—	1	2	—	—	—	—	—	3	—	—	—	—	—	—	—	3
4/25 (Attock Garrison)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

7th Hussars	5	4	9	9	—	2	2	4	1	—	—	—	4	4	1	—	—	—	—	—	4	5
19th „	11	4	15	11	1	3	1	4	2	—	—	1	4	—	6	—	—	—	2	2	1	6
20th „	7	20	27	27	4	3	6	6	8	—	3	2	8	9	5	—	2	—	9	—	3	13
21st „	2	1	3	3	—	1	1	1	—	—	—	1	—	1	1	—	—	—	—	—	1	2
1/3rd Regiment	9	6	15	13	1	6	1	1	4	—	—	1	6	—	6	—	—	—	—	3	4	6
1/5th „	14	8	22	16	—	2	3	7	4	—	—	2	3	6	5	—	—	2	1	4	4	5
1/6th „	16	7	23	21	3	8	4	3	3	—	3	5	2	6	5	—	—	3	2	4	7	5
1/7th „	6	3	9	6	2	1	3	—	—	—	—	3	1	2	—	—	—	2	—	—	3	1
2/12th ,	12	10	22	20	4	1	5	4	6	—	2	3	—	9	6	—	—	5	—	1	4	10
1/19th „	7	5	12	11	3	—	2	6	—	—	3	—	1	3	4	—	2	1	—	1	1	6
36th „	11	4	15	12	2	1	4	5	—	—	1	3	—	3	5	—	—	1	2	2	—	7
38th „	9	14	23	21	1	5	6	9	—	—	1	3	5	2	10	—	—	3	—	2	5	11
41st „	7	1	8	7	1	2	2	2	—	—	—	2	1	2	2	—	—	3	—	2	1	1
77th ,	2	4	6	3	1	1	—	1	—	—	—	—	1	1	1	—	—	—	1	1	—	1
79th „ Head Quarters	3	6	9	8	—	4	1	3	—	—	—	2	2	—	4	—	—	—	1	2	1	4
79th „ Wing	3	—	3	3	—	2	1	—	—	—	—	2	1	—	—	—	—	1	1	—	—	1
88th „	14	21	35	31	2	4	7	5	13	—	1	2	3	10	15	—	1	—	3	3	8	16
93rd „	22	11	33	33	5	3	7	4	14	—	—	5	2	7	19	—	—	—	3	2	5	23
103rd ,	16	23	39	32	2	2	5	11	12	—	—	2	6	4	20	—	—	2	—	3	3	24
109th „	24	16	40	37	5	5	8	4	15	—	—	9	4	8	16	—	—	2	2	1	6	26
Murree Depôt	8	7	15	10	3	5	2	—	—	—	3	—	3	4	—	—	2	1	—	2	5	—
Total	258	220	478	418	49	77	88	103	101	1	20	59	72	100	166	—	9	30	34	43	73	229

92nd Regiment, Phillone Garrison. Reports accompany—not summarized in above.

Summary of Results of Inspection of Schools visited 1867–68.—Children—*continued.*

Schools examined.	Number of good writers.	Progress.													Infants.		Industrial School.					
		Number examined.	Dictation.				Writing.				Arithmetic.				On Roll.	Examined.	Number attending.	Attainments.				
			G.	P.	S.	R.	G.	P.	S.	R.	G.	P.	S.	R.				1	2	3	4	5
A. Brigade, Meerut - -	2	4	—	4	—	—	1	3	—	—	—	3	1	—	33	Not noted, say 30.	24	1	3	3	6	11
F. „ Umballa - -	—	4	2	2	—	—	2	2	—	—	3	1	—	—	20	20	25	—	2	—	5	18
19th „ R.A., Peshawur -	2	2	—	1	1	—	1	—	1	—	—	1	1	—	33	21	26	—	1	3	5	17
22nd „ „ Morar - -	1	—	—	—	—	—	—	—	—	—	—	—	—	—	23	20	25	1	—	6	6	12
24th „ „ Lahore - -	Not noted.	8	4	3	1	—	2	6	—	—	—	5	3	—	25	23	29	—	—	11	7	11
R.A., Rawulpindee - -	2	—	—	—	—	—	—	—	—	—	—	—	—	—	8	8	5	—	3	—	2	—
B/F. R.H.A. - - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	6	—	—	—	—	—	—
E/16 R.A. - - - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14	11	—	—	—	—	—	—
G/16 „ - - - -	1	—	—	—	—	—	—	—	—	—	—	—	—	—	7	7	—	—	—	—	—	—
A/19 „ - - - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
G/19 „ - - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	7	—	—	—	—	—	—
B/22 „ - - - -	2	—	—	—	—	—	—	—	—	—	—	—	—	—	15	15	8	—	3	1	—	4
7/22 „ - - - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6/24 (Garrison, Govindghur) -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2/25 R.A. - - - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	7	—	—	—	—	—	—

4/25 (Attock Garrison)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	7	—	—	—	—	—	—
7th Hussars	—	4	—	4	—	—	—	2	2	—	—	3	1	—	9	7	11	—	4	—	3	4
19th „	—	8	—	3	5	—	—	6	2	—	—	3	5	—	17	15	12	—	3	3	—	6
20th „	5	19	1	14	4	—	1	15	3	—	—	13	6	—	12	5	15	3	4	1	4	3
21st „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12	12	5	—	1	—	4	—
1/3rd Regiment	—	10	—	4	5	1	—	4	6	—	—	4	6	—	32	22	23	2	3	4	3	11
1/5th „	—	16	2	13	1	—	—	12	4	—	2	10	4	—	24	16	17	3	—	4	—	10
1/6th	7	—	—	—	—	—	—	—	—	—	—	—	—	—	28	26	19	4	5	—	—	10
1/7th „	1	7	2	4	1	—	2	4	1	—	—	7	—	—	21	15	25	—	4	—	21	—
2/12th „	4	10	1	7	2	—	—	7	2	1	—	4	6	—	32	22	38	3	3	—	12	20
1/19th „	2	6	—	5	1	—	—	6	—	—	—	3	3	—	29	24	21	4	—	6	—	11
36th „	1	12	3	7	2	—	3	9	—	—	—	11	1	—	12	11	13	—	1	—	3	9
38th „	2	20	1	11	8	—	2	16	2	—	1	2	16	1	50	36	33	2	4	2	8	17
41st „	—	6	—	6	—	—	1	5	—	—	1	5	—	—	45	32	9	1	—	3	—	5
77th „	1	2	—	2	—	—	—	2	—	—	—	2	—	—	5	4	4	—	1	1	—	2
79th „ Head Quarters	—	5	1	4	—	—	1	3	1	—	1	3	1	—	10	7	8	—	2	2	—	4
„ „ Wing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	4	3	—	—	—	3	—
88th „	2	31	2	24	5	—	1	28	2	—	—	9	22	—	19	Say 15	25	2	5	5	5	8
93rd „	1	6	—	5	1	—	1	4	1	—	—	5	1	—	24	24	26	—	4	4	—	18
103rd „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39	Say 30	39	2	6	8	6	17
109th „	4	—	—	—	—	—	—	—	—	—	—	—	—	—	28	18	36	2	2	6	11	15
Murree Depôt	1	—	—	—	—	—	—	—	—	—	—	—	—	—	15	14	5	1	1	3	—	—
Total	41	180	19	123	37	1	18	134	27	1	8	94	77	1	676	541	529	31	65	76	114	243

App. II.
No. 12.

Appendix II.—No. 12.

Report by Captain Dunn for 1869.

No. 581.

Sir, Head Quarters, Simla, 22nd October 1869.

I have the honour to forward, for the information of the Council of Military Education, the accompanying letter No. 993, dated 31st August 1869, from the Superintendent of Army Schools in Bengal, transmitting the reports of 37 schools inspected between the 24th November 1868 and 23rd June 1869.

The school reports have been despatched by this mail to your address by book post, in accordance with War Office Circular, Clause 118 D, 1st September 1869.

I have, &c.
W. R. Mansfield, General,
Commander-in-Chief in India.

To the Vice-President, Council of
Military Education, London.

No. 993.

Office of Superintendent of Army Schools,
Sir, Kussowlie, 31st August 1869.

I have the honour to submit, for transmission to the Council of Military Education, reports on 37 schools inspected by me during a tour extending from 24th November to 27th December, and from 25th January to 23rd June last, with duplicates of the same for the information of his Excellency the Commander-in-Chief.

The return of the latter, when done with, is solicited. A copy of the report on each school has been forwarded to the commanding officer.

The excessive and exceptional heat of the weather during the last two months of the above period greatly interfered with my inspections, and delayed my return to office. It will, I apprehend, suffice in explanation of the delay in submitting this report to point to my official correspondence books, which show a total of 686 letters, &c. since my return, including the preparation of estimates and indents for supplies for the ensuing year, the examination of the papers of 214 candidates for certificates, and the half-yearly examination of the normal school for army schoolmistresses; this work having been performed by myself, the assistant superintendent, and a single clerk.

Adults; numbers examined.

2. From the accompanying abstract of reports, it will be seen that in 37 schools visited, having a total attendance of 2,475 adult scholars, 1,569 or 63 per cent. of the whole were examined. I was unable to inspect the schools of the 2nd battalion 25th, 96th, and 105th Regiments, these not having been organized at the date of my visit since the arrival of the corps at their respective stations, and that of 58th Regiment which was in camp on account of cholera. The school of the Convalescent Depôt at Darjeeling had not been formed.

Attendance, &c.

3. Of the total number of adult scholars on the books, 1,706 or very nearly 70 per cent. were attending by order, the attendance being entirely voluntary only in D 8 Brigade R.A., 5th Lancers, 79th Highlanders, and Nynee Tal Depôt, in all of which the attendance is comparatively small. Of the 16 schools of regiments inspected, six were separated into wings or detached from head quarters, and six others had

either been recently separated into wings or had recently arrived from England. So that the schools of four only had been working under trained schoolmasters without interruption during the previous year. This will account in a great measure for the lowness of the standards of attainments, and the comparatively small number who qualified for certificates.

4. The per-centages of adults who attained to the various standards are as follows :— Attainments.

In Reading.					In Dictation.						In Arithmetic.					
A.	B.	C.	D.	Below.	Above A.	A.	B.	C.	D.	Below.	A.	B.	C.	D.	E.	Below.
29	30	20	10	9	2	14	20	20	19	22	28	12	17	18	19	30

Very little direct instruction is given in geography or history ; hence few candidates for first-class certificates came forward.

The per-centage of good writers is 24. This is a considerable advance on the result of my last year's examination, in which the per-centage was 14 only. Much, I consider, remains yet to be done by the schoolmasters to improve the style adopted by the lower class scholars in the dictation and writing exercises. The largest per-centage of good writers was in D 8 R.A. and 107th Regiment, being 42 and 40 respectively ; while the lowest per-centage were in the Nynee Tal depôt and five Artillery schools, ranging from 9 to 12 per cent.

5. The number of books examined for record of progress was somewhat small. This is owing chiefly to omission of or defective examination on the part of acting schoolmasters in the absence of trained schoolmasters. In regard to those examined (811) the per-centages of progress are as under :— Record of progress.

In Dictation.				In Writing.				In Arithmetic.			
Good Progress.	Progressing.	Stationary.	Gone back.	Good Progress.	Progressing.	Stationary.	Gone back.	Good Progress.	Progressing.	Stationary.	Gone back.
3·7	62	33	0·3	3·4	61	34	0·6	3·4	49	45	1·3

This result is, on the whole, an improvement on that of last year.

——	For 1st Class.	2nd Class.	3rd Class.
The numbers of certificates recommended during my inspection were - - -	1	26	72
And on examinations held in my office during the year - - - - - -	11	105	131

Certificates of education.

App. II. No. 12. Further particulars are given in an appendix to this report. The experiment is being tried by some commanding officers of making the possession of certificates an essential condition in view to promotion. This is done in 26th, 77th, and 102nd Regiments, and in one or more brigades of Artillery, but there has as yet been hardly time to judge of the results of the experiment.

Special classes. 7. Special classes have been held in 28 schools in this presidency during the year ending 31st May, and in 11 throughout the entire year; the average number of months during which all have been maintained being eight. In the month of May there were 487 men attending special classes, with an average daily attendance of 320. The highest attendance has been in 26th Regiment (42 daily average for seven months), 1/5th Regiment (25 for two months), 36th Regiment (20 for entire year), and 38th Regiment (20 for four months).

Night classes. 8. Night classes for voluntary attendants have been held in 27 schools, but in six only during the entire year; the average number of months during which all have been maintained being seven. The average number on the roll for each regiment having a night school has been 33, with a nightly attendance of 16. The 7th Hussars had a nightly attendance of 66 for three months, and the 20th Hussars of 40 for nine months.

Hindustani classes. 9. Hindustani classes have been held in 49 schools, and in 27 throughout the year. The average number on the roll monthly in each has been 7·7, with a daily attendance of 3·8. In the schools examined by me I found 180 men studying, of whom one had passed the higher standard of examination, 12 the lower, 48 were studying for the lower standard, and 119 were beginners.

Children; number examined and attainments. 10. Amongst the grown children, out of 515 on the school rolls, 458 or 88 per cent. were examined by me. The per-centages of their attainments were as follows:—

In Reading.					In Dictation.					In Arithmetic.					
A.	B.	C.	D.	Below.	A.	B.	C.	D.	Below.	A.	B.	C.	D.	E.	Below.
10	16	23	23	17	6·7	10	12	26	43	1·7	6	7	7	15	61

And of progress (240 books examined):—

In Dictation.				In Writing.				In Arithmetic.			
Good Progress.	Progressing.	Stationary.	Gone back.	Good Progress.	Progressing.	Stationary.	Gone back.	Good Progress.	Progressing.	Stationary.	Gone back.
7	71	20	0·4	7	68	21	1	4	43	51	1

Geography, English history, and grammar are taught to the elder children only, with fair results.

Infants. 11. Of 822 infants on the school rolls I saw about 590. During the latter part of my tour, the heat of the weather was so extreme that the

attendance of infants was very small. The want of suitable separate accommodation and furniture for infant schools has not yet been supplied, but in the new barracks under construction in many large stations these requisites will, it is hoped, be provided.

General remarks on infant schools.

I must confess myself not thoroughly satisfied with the results of the instruction in the infant schools generally. Much labour appears to me to be expended to small profit. The collective lessons, when given, do not seem to reach and impress more than a few of the elder infants, and the infants when transferred to the grown children's school are as a rule by no means so well prepared as I consider they should be. I have as yet met with no infant school to which I could point as a model for others. Those of regiments most recently from home I saw under disadvantages which rendered me unable to judge of their efficiency. I was most pleased with the infant school of the 26th Regiment, which, however, at the time of my visit had the great advantage of two good rooms and a gallery, enjoyed by no other infant school in this presidency.

It may, I conceive, be assumed that something like the following should be aimed at in regard to the qualifications of an infant when transferred to the grown children's school: He should be able to read a very easy book (such as "My First School Book") freely, with attention to stops, to spell correctly most of the words of the same, and to comprehend its meaning. I would add, though here differing in opinion from some of the inspectors at home, to write a good deal of it from dictation. He should be able to perform mentally, and with figures on the black board only, easy calculations involving all the simple rules; and have some knowledge practically of numeration as far as hundreds, and of the relative values of the coins in common use. He should by means of collective lessons have received instruction in the early and easily understood portions of the Old and New Testament narrative, preparatory to the schoolmaster's more detailed and systematic Bible lessons, and have been led to observe and compare common objects with reference to the distinctive colours, forms, and more obvious properties of the same.

The above may I believe be readily imparted by judicious instruction, but I must say, so far as my experience goes, that such is not only very seldom attained but in few cases even aimed at. I have not unfrequently found the elder infants attempting to read or rather to spell over such difficult books as "Simple Truths" or "Second Reading Book," while quite unable to read properly, spell, or comprehend the easy lessons on M'Leod's cards. I have likewise observed much time spent, wasted I should rather say, by the schoolmistress and monitresses in setting a separate head line on a slate for each infant, which has been imitated after a fashion, without supervision, and with very little effect.

Considering the great importance to the subsequent progress of a child of the instruction received in the infant school, I think some definite rules on this head would be useful.

Industrial classes.

12. Regarding the industrial classes I have no special remark to make. They appear to me to be, in general, efficiently conducted, and to be creditable to the schoolmistresses.

Schoolmasters and schoolmistresses.

13. The conduct of the schoolmasters and schoolmistresses has been all that could be desired, the only exceptions being in the case of two provisional schoolmasters, in regard to whom some dissatisfaction existed, though not formally reported, but both of these have left the presidency. I take the opportunity of correcting here a clerical error made in my report dated 29th October 1866, published in the appendix to the Council's fifth annual report, where in paragraph 15 it is stated that "in one instance only (that of the schoolmaster 7th Hussars) I

App. II. No. 12.

"found some dissatisfaction expressed." The remark should have applied to the schoolmaster* 21st Hussars, who was afterwards reduced to the ranks by sentence of a court-martial. Schoolmaster Hanley of the 7th Hussars is one of the most efficient and exemplary schoolmasters in the presidency.

One artillery brigade and three regiments are at present without schoolmasters in consequence of the death of one and the invaliding of three former incumbents, and two artillery stations for which schoolmasters have been sanctioned are awaiting supply. Of the 48 regiments and artillery brigades in this presidency 35 have trained schoolmistresses trained at home or locally,† and the remaining 13 acting schoolmistresses.

Pupil teachers.

14. The employment of pupil teachers has been sanctioned by the Indian Government, but as the pay for such class in the first year has been fixed at the same rate as for a monitress no application for the appointment of any has as yet been received. A revision of the rates to correspond relatively with those in force at home has been suggested.

Lectures, &c.

15. As regards lectures I fear not much has been done. The five magic lanterns sent out to this presidency have been found insufficient to enable the circulation to be effected with the rapidity necessary to afford all the stations an opportunity of profiting by them, and the long distances the instruments have to be sent render them liable to damage. A proposal for increasing the number of the lanterns and rendering them stationary or restricting the circulation within small limits, is under consideration. I have record of only 27 lectures or entertainments with aid of the magic lantern, and 20 readings given during the year ending May 1869. Nearly all these were given by schoolmasters. It may be interesting to the Council to know that station readings for the amusement of the soldiers appear to be becoming common in this presidency. I have no official record of these, but can refer to several stations where they have been given with marked success. In this little station six readings have been given during the present hot season, and four of these had to be repeated to render them available to all who wished to attend. In these readings, which were varied by songs, glees, &c., the soldiers of the depôt, as well as the residents of the station, took part.

Assistant-superintendent of army schools.

16. I have only to add that, as heretofore, I have received the most valuable assistance from Mr. Purdon, assistant superintendent of army schools, in every branch of my office duties, both while I have been present at Kussowlie and in particular during my absence on my inspection tour.

I have, &c.,
F. W. Dunn, Captain,
Superintendent of Army Schools in Bengal.

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* Provisional.
† 15 trained at home, 20 trained locally.

Appendix to Captain Dunn's Report.

A. Table of Certificates obtained by different regiments.
B. „ „ by different ranks.
C. Abstract of Results of Inspection, Adults.
D. „ „ „ Children.
E. Remarks regarding method in teaching reading, writing, and dictation in infant schools.

A.—TABLE showing the NUMBER of SCHOOL CERTIFICATES of the several CLASSES obtained in different REGIMENTS or CORPS between June 1868 and July 1869. APP. II. No. 12.

Regiments or Corps.	Class.			Total of Certificates.
	1st.	2nd.	3rd.	
Royal Artillery, Meerut	—	1	9	10
" " Umballa	—	9	17	26
" " Lucknow	—	7	4	11
" " Pashawur	—	1	1	2
" " Barrackpore	—	—	3	3
" " Morar	—	—	7	7
F/C Royal Horse Artillery	—	—	2	2
F/8 Brigade Royal Artillery	—	—	2	2
H/8 " " "	—	3	2	5
F/16 " " "	—	—	3	3
3/22 " " "	—	—	4	4
7/22 " " "	—	—	1	1
1/25 " " "	1	1	5	7
5th Lancers	—	2	—	2
7th Hussars	5	8	—	13
19th "	—	—	5	5
1/3rd Regiment	—	12	12	24
1/11th "	1	19	2	22
26th "	—	—	19	19
41st "	—	—	3	3
55th "	—	10	—	10
2/60th Rifles	—	4	7	11
62nd Regiment	—	3	15	18
77th "	1	24	57	82
79th Highlanders	—	—	1	1
93rd "	1	6	5	12
102nd Regiment	1	11	12	24
103rd "	1	8	—	9
107th "	—	—	2	2
3rd Battalion Rifle Brigade	1	2	3	6
Total	12	131	203	346
Total of unsuccessful Candidates	In all Classes			299
Total of Candidates examined	In all Classes			645

B.—TABLE showing the NUMBER of CERTIFICATES of different CLASSES obtained by different RANKS.

Class of Certificate.	Non-commissioned Officers, full and acting.	Privates, Gunners, and Drivers.	Drummers, Trumpeters, &c.
1st	8	4	—
2nd	94	33	4
3rd	143	52	8
Total	245	89	12
Grand Total	346		

C.—Summary of Results of Inspection of Schools visited during Tour 1868–69 (Adults).

Schools examined.	No. on Roll at Date of Examination.			Present at Examination.	Attainments.																
					Reading.					Dictation.						Arithmetic.					
	N. C. O.	Privates.	Total.							A. A.											
A. Brigade, R. H. A., Meerut -	77	86	163	72	41	17	9	2	3	5	13	20	17	9	8	—	9	17	23	7	16
8th „ R. A., Lucknow -	44	30	74	57	23	15	7	7	5	1	7	17	16	7	9	4	8	8	16	7	14
16th „ „ Barrackpore -	17	69	86	62	10	24	7	11	10	—	6	12	10	18	16	—	2	11	6	16	27
25th „ „ Allahabad -	26	55	81	40	7	9	8	6	10	—	7	6	6	4	17	—	3	5	6	9	17
F/C R. H. Artillery - -	10	27	37	25	1	8	13	2	1	—	1	5	3	12	4	—	—	3	1	9	12
D/8 R. A. - - - -	17	11	28	26	12	6	4	1	3	1	7	6	5	3	4	4	7	3	4	5	3
E/8 „ - - - -	15	29	44	47	12	20	3	4	8	2	5	9	10	7	14	—	12	8	4	10	13
F/8 „ - - - -	14	27	41	29	5	10	4	3	7	2	4	4	5	3	11	—	7	2	3	3	14
G/8 „ - - - -	11	30	41	33	5	10	2	6	10	—	4	7	2	4	16	—	4	1	7	2	19
H/8 „ - - - -	12	19	31	21	3	15	2	1	—	—	3	8	5	3	2	1	5	5	5	3	2
F/16 „ - - - -	26	46	72	26	2	11	3	5	5	—	2	2	5	6	11	—	1	4	2	7	12
3/22 „ - - - -	15	12	27	21	9	10	2	—	—	—	6	9	2	3	1	1	1	10	3	2	4
7/22 „ - - - -	10	15	25	18	2	7	3	2	4	—	1	7	2	1	7	—	2	4	3	1	8
1/25 „ - - - -	15	10	25	19	3	9	4	1	2	—	1	6	4	5	3	1	1	3	4	3	7
2/25 „ - - - -	11	19	30	23	8	3	5		4	—	5	3	2	4	9	1	1	3	2	2	14

4th Hussars	34	75	109	69	40	12	7	4	6	4	7	13	21	8	16	3	4	7	14	20	21
5th Lancers	17	32	49	36	8	8	11	6	3	—	4	9	4	15	4	—	10	—	7	15	4
11th Hussars	40	70	110	62	22	20	14	5	1	—	12	9	13	14	14	2	14	14	4	13	15
19th „	15	36	51	41	2	17	12	6	4	—	2	10	10	8	11	—	—	8	7	9	17
19th „ Left Wing	10	—	10	9	2	3	3	1	—	—	—	1	2	3	3	—	—	—	1	3	5
1/11th Regiment	67	52	119	76	17	35	14	7	3	—	10	21	19	13	13	2	18	16	14	13	13
1/14th „	92	175	267	137	25	49	41	14	8	4	9	20	23	42	39	3	9	12	34	32	47
26th „	81	65	146	96	31	30	20	10	5	—	21	9	26	21	19	2	8	14	23	21	28
37th „	51	27	78	28	10	6	4	8	—	—	6	6	4	5	7	3	7	5	3	4	6
37th „ Left Wing	14	18	32	40	9	5	14	8	4	1	6	5	4	12	12	2	4	5	5	3	21
41st Detachment	22	17	39	30	7	4	9	3	7	—	3	4	6	4	13	1	1	3	6	7	12
55th Depôt	15	—	15	10	1	5	2	2	—	—	—	4	2	3	1	—	4	2	1	1	2
2/60th Rifles	50	18	68	34	19	7	5	1	2	1	13	7	5	4	4	3	2	9	7	1	12
2/60th „ Left Wing	49	52	101	72	16	17	10	15	14	—	15	12	11	7	27	—	5	13	8	9	37
62nd Regiment	51	89	140	76	42	20	9	3	2	6	22	18	11	11	8	3	11	17	19	18	8
79th „	3	13	16	12	1	5	6	—	—	—	1	1	3	7	—	—	—	3	3	5	1
79th „ Left Wing	1	14	15	11	7	—	3	1	—	—	1	3	4	1	2	1	—	1	1	5	3
102nd „	111	13	124	64	23	15	23	3	—	4	8	13	22	16	1	3	18	23	17	3	—
107th „	41	37	78	79	23	30	16	82	—	—	13	24	17	16	9	2	10	21	13	25	8
3rd Battalion, R. Brigade	46	21	67	46	12	15	10	2	7	—	6	11	10	7	12	3	3	6	4	9	21
Con. Depôt, Nynee Tal.	8	28	36	22	2	7	7	3	3	—	1	5	4	4	8	—	4	—	5	2	11
Total	1,138	1,337	2,475	1,569	462	484	316	164	143	31	232	326	315	310	355	45	195	266	285	304	474

C.—Summary of Results of Inspection of Schools visited during Tour 1868–69 (Adults)—*continued.*

Schools examined.	Number of good Writers.	Progress.													Date of Examination.		Certificates recommended.		
		No. of Books Examined.	Dictation.				Writing.				Arithmetic.				No. of Voluntary and Compulsory Scholars.				
			G.	P.	S.	R.	G.	P.	S.	R.	G.	P.	S.	R.	Voly.	Comp.	1st.	2nd.	3rd.
A. Brigade, R. H. A., Meerut	22	65	2	33	30	—	2	50	13	—	1	32	32	—	8	155	—	1	9
8th „ R. A., Lucknow	12	16	—	16	—	—	—	11	5	—	—	15	1	—	3	71	—	7	4
16th „ Barrackpore	8	40	2	17	21	—	—	23	17	—	—	8	32	—	—	86	—	—	3
25th „ Allahabad	8	14	—	10	4	—	—	10	4	—	—	3	11	—	3	78	—	—	—
F/C R. H. Artillery	3	21	—	13	8	—	—	11	10	—	—	9	12	—	6	31	—	—	2
D/8 R. A.	11	13	—	12	1	—	—	9	4	—	—	8	5	—	28	—	—	—	—
E/8 „	5	—	—	—	—	—	—	—	—	—	—	—	—	—	29	15	—	—	—
F/8 „	9	18	1	11	6	—	1	11	6	—	—	10	8	—	9	32	—	—	2
G/8 „	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41	—	—	—
H/8 „	7	—	—	—	—	—	—	—	—	—	—	—	—	—	4	27	—	3	2
F/16 „	4	16	1	6	9	—	1	6	9	—	1	3	12	—	9	63	—	—	3
3/22 „	6	—	—	—	—	—	—	—	—	—	—	—	—	—	14	13	—	—	4
7/22 „	2	—	—	—	—	—	—	—	—	—	—	—	—	—	12	13	—	—	1
1/25 „	2	—	—	—	—	—	—	—	—	—	—	—	—	—	7	18	—	—	1
1/25 „	3	4	1	2	1	—	1	2	1	—	—	1	3	—	—	30	—	—	—

4th Hussars	15	58	—	50	8	—	1	41	16	—	1	49	8	—	75	34	—	—	—
5th Lancers	9	31	2	21	8	—	—	22	9	—	—	12	14	5	49	—	—	2	—
11th Hussars	20	15	1	14	—	—	2	11	2	—	3	10	2	—	18	92	—	—	—
19th „	8	36	4	24	8	—	4	25	7	—	1	25	10	—	3	48	—	—	5
19th „ Left wing	3	8	—	5	3	—	1	5	2	—	—	2	6	—	—	10	—	—	—
1/11th Regiment	18	99	1	48	50	—	2	44	52	1	4	43	51	1	60	59	—	2	2
1/14th „	34	119	2	98	19	—	1	89	29	—	4	75	39	1	143	124	—	—	—
26th „	25	—	—	—	—	—	—	—	—	—	—	—	—	—	6	140	—	—	—
37th „	8	35	1	30	4	—	1	27	7	—	1	22	12	—	27	51	—	—	—
37th „ Left Wing	11	18	2	10	6	—	2	10	6	—	1	4	13	—	18	14	—	—	—
41st Detachment	4	—	—	—	—	—	—	—	—	—	—	—	—	—	3	36	—	—	3
55th Depôt	2	5	—	4	1	—	—	3	2	—	—	1	4	—	—	15	—	—	—
2/60th Rifles	12	40	—	13	27	—	—	20	20	—	2	15	22	1	10	58	—	3	3
2/60th „ Left Wing	13	39	1	20	17	1	—	18	20	1	—	12	27	—	52	49	—	1	4
62nd Regiment	21	57	2	28	25	2	3	31	21	2	4	18	32	3	37	103	—	3	15
79th „	3	4	3	—	1	—	3	—	1	—	3	—	1	—	16	—	—	—	—
79th „ Left Wing	3	—	—	—	—	—	—	—	—	—	—	—	—	—	15	—	—	—	1
102nd Regiment	18	40	4	22	14	—	3	16	20	1	2	24	14	—	17	107	—	2	3
107th „	32	—	—	—	—	—	—	—	—	—	—	—	—	—	33	45	—	—	2
3rd Battalion, Rifle Brigade	10	—	—	—	—	—	—	—	—	—	—	—	—	—	21	46	1	2	3
Con. Depôt, Nynee Tal	2	—	—	—	—	—	—	—	—	—	—	—	—	—	36	—	—	—	—
Total	383	811	30	507	271	3	28	495	283	5	28	401	371	11	771	1,704	1	26	72

D.—Summary of Results of Inspections of Schools visited during Tour 1868–69 (Children).

Schools examined.	Number on Roll.			Number examined.	Attainments.																
					Reading.					Dictation.						Arithmetic.					
	Boys.	Girls.	Total.		A	B	C	D	Below.	A A	A	B	C	D	Below.	A	B	C	D	E	Below.
A Brigade R.A., Meerut	11	8	19	18	3	1	5	4	5	—	2	1	2	1	12	—	1	—	3	2	12
8th „ „ Lucknow	11	9	20	20	3	5	2	6	4	—	1	3	4	4	8	—	1	4	3	2	10
16th „ „ Barrackpore	6	6	12	12	2	1	1	6	2	—	1	1	2	4	4	—	—	—	3	2	7
25th „ „ Allahabad	5	2	7	7	1	1	3	2	—	—	—	1	1	4	1	—	—	—	1	1	5
F/C R.H.A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
D/8 R.A.	7	2	9	9	1	1	1	4	2	—	1	1	1	1	5	—	1	—	1	2	5
E/8 „	—	2	2	1	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	1
F/8 „	Children included with 2/60th Regiment.																				
G/8 „	2	—	2	2	—	—	—	2	—	—	—	—	—	—	2	—	—	—	—	—	2
H/8 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
F/16 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3/22 „	1	—	1	1	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	1	—
7/22 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1/25 „	1	1	2	2	—	—	—	2	—	—	—	—	—	—	2	—	—	—	—	—	2
2/25 „	3	5	8	8	—	4	2	1	1	—	—	4	1	—	3	—	—	—	3	2	3
4th Hussars	7	2	9	9	—	3	—	4	2	—	—	—	3	2	4	—	—	—	—	2	7

5th Lancers	15	2	17	13	1	1	5	2	4	—	1	—	4	3	5	—	1	1	3	1	7
11th Hussars	4	3	7	6	2	1	1	2	—	—	1	2	1	1	1	—	1	3	1	1	—
19th „ Head Quarters	11	3	14	11	1	1	3	3	3	1	1	1	—	2	6	1	—	2	—	1	7
19th „ Left Wing	4	4	8	8	—	3	1	4	—	—	—	—	1	3	4	—	—	1	1	2	4
1/11th Regiment	17	21	38	31	4	5	7	10	5	—	3	3	4	8	13	2	4	3	1	4	17
1/14th „	7	5	12	12	—	6	3	3	—	—	—	3	4	4	1	—	1	2	1	4	4
26th „	6	4	10	10	3	1	2	—	4	—	2	2	—	2	4	—	3	1	—	2	4
37th „ Head Quarters	12	5	17	17	4	—	4	5	4	—	2	2	—	6	7	3	—	1	—	5	8
37th „ Wing	3	1	4	4	1	1	1	1	—	—	1	—	2	1	—	1	—	1	—	2	—
41st „ Detachment	2	—	2	2	—	—	—	2	—	—	—	—	—	—	2	—	—	—	—	—	2
55th „ Depôt	25	10	35	33	1	5	14	9	4	—	2	2	3	12	14	—	2	1	3	2	25
2/60th „ Head Quarters	7	7	14	13	3	4	1	3	2	—	—	3	5	1	4	—	—	2	2	1	8
„ „ Wing	5	6	11	10	—	2	3	1	4	—	—	2	2	1	5	—	1	1	1	1	6
62nd „	17	17	34	26	1	3	8	9	5	—	—	1	4	7	14	—	—	—	1	6	19
102nd „	40	31	71	60	4	3	11	25	17	—	1	4	2	9	44	—	2	4	—	3	51
107th „	7	12	19	19	2	8	2	7	—	—	2	1	5	10	1	—	2	2	—	8	7
3rd Battalion Rifle Brigade	25	9	34	31	2	4	8	13	4	—	1	2	3	14	11	—	2	1	3	6	19
Chunar Invalid Battalion	25	24	49	37	4	5	12	14	2	—	7	2	2	10	16	1	1	2	—	7	26
Nynee Tal Depôt	8	4	12	10	—	2	1	3	4	—	—	2	—	1	7	—	1	—	1	—	8
79th Regiment, Head Quarters	6	6	12	12	1	3	3	5	—	—	1	3	1	7	—	—	2	2	2	—	6
79th „ Wing	2	2	4	4	2	1	1	—	—	—	—	2	1	1	—	—	1	1	—	1	1
Total	302	213	515	458	46	75	106	152	79	1	30	48	58	120	201	8	27	35	34	71	283

D.—Summary of Results of Inspection of Schools visited during Tour 1868–69 (Children)—*continued.*

Schools examined.	Number of good Writers.	Progress.													Infants.		Industrial School.					
		Number examined.	Dictation.				Writing.				Arithmetic.				On Roll.	Examined.	Number attending.	Attainments.				
			G.	P.	S.	R.	G.	P.	S.	R.	G.	P.	S.	R.				1	2	3	4	5
A Brigade R.A., Meerut	3	10	—	10	—	—	—	10	—	—	—	8	2	—	31	—	24	1	5	5	4	9
8th „ „ Lucknow	1	19	—	12	6	—	1	17	1	—	1	12	6	—	28	26	40	7	—	7	7	19
16th „ „ Barrackpore	2	4	—	4	—	—	—	4	—	—	—	1	3	—	13	13	11	3	1	—	2	5
25th „ „ Allahabad	1	3	—	2	1	—	—	2	1	—	—	1	2	—	14	14	—	—	—	—	—	—
F/C R.H.A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4	—	—	—	—	—	—
D/8 R.A.	2	6	—	5	1	—	—	5	1	—	1	3	2	—	23	23	9	—	—	2	3	4
E/8 „	Children included with 2/60th Regiment.														19	19	10	—	—	—	—	10
F/8 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
G/8 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	7	—	—	—	—	—	—
H/8 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18	15	—	—	—	—	—	—
F/16 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11	11	—	—	—	—	—	—
3/22 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	6	—	—	—	—	—	—
7/22 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1/25 „	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	9	—	—	—	—	—	—
2/25 „	2	1	1	—	—	—	1	—	—	—	—	1	—	—	7	5	—	—	—	—	—	—
4th Hussars	—	3	1	2	—	—	—	3	—	—	—	3	—	—	24	24	13	—	—	4	3	6

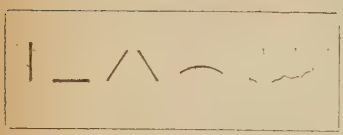
5th Lancers	4	15	—	14	1	—	1	13	1	—	—	9	6	—	49	37	23	—	7	8	—	8
11th Hussars	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24	24	11	—	2	—	4	5
19th „ Head Quarters	3	8	3	1	4	—	3	2	3	—	1	5	2	—	10	10	8	—	1	1	3	3
19th „ Left Wing	—	7	2	—	5	—	2	2	3	—	—	2	5	—	8	8	—	—	—	—	—	—
1/11th Regiment	3	36	—	34	2	—	—	21	15	—	—	17	19	—	47	—	32	1	9	—	12	10
1/14th „	2	6	1	5	—	—	1	5	—	—	—	3	3	—	34	23	—	—	—	—	—	—
26th „	4	—	—	—	—	—	—	—	—	—	—	—	—	—	51	45	47	3	4	3	5	32
37th „ Head Quarters	2	8	2	6	—	—	2	6	—	—	1	6	1	—	21	18	21	4	—	2	—	15
„ „ Wing	—	4	3	1	—	—	3	1	—	—	3	—	1	—	18	18	—	—	—	—	—	—
41st „ Detachment	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19	19	4	—	—	—	—	4
55th „ Depôt	2	16	—	9	7	—	—	5	8	3	—	3	13	—	43	36	53	—	4	6	6	37
2/60th „ Head Quarters	1	8	—	5	3	—	—	6	2	—	—	1	7	—	23	12	13	—	—	3	4	6
„ „ Wing	1	7	—	3	4	—	—	7	—	—	—	1	6	—	11	8	—	—	—	—	—	—
62nd „	1	20	—	8	11	1	—	10	9	—	—	5	14	1	49	15	40	—	14	—	26	—
102nd „	1	15	—	15	—	—	—	12	3	—	—	—	13	2	45	32	28	—	5	4	19	—
107th „	5	12	—	12	—	—	1	11	—	—	1	9	2	—	39	39	16	—	5	6	3	2
3rd Battalion Rifle Brigade	3	—	—	—	—	—	—	—	—	—	—	—	—	—	35	33	29	—	4	3	3	10
Chunar Invalid Battalion	9	20	1	17	2	—	1	15	4	—	1	9	10	—	28	20	36	4	5	8	—	19
Nynee Tal Depôt	—	—	—	—	—	—	—	—	—	—	—	—	—	—	29	18	—	—	—	—	—	—
79th Regiment, Head Quarters	2	11	3	7	1	—	3	7	1	—	1	5	5	—	14	14	14	4	4	—	—	6
„ „ Wing	2	1	—	1	—	—	—	1	—	—	—	—	1	—	12	7	4	1	1	—	1	1
Total	56	240	18	173	48	1	19	166	52	3	10	104	123	3	822	612	486	28	71	62	105	220

App. II. No. 12.

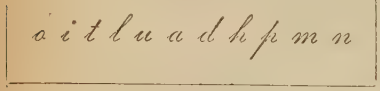
Having in the body of the report expressed an opinion that the infants before being transferred to the grown children's schools should or might have made some progress in dictation, I beg to append a few remarks showing how I conceive this may be accomplished with advantage. I do not profess to advance anything absolutely original, but can say that I have not found any such plan adopted in the schools under my supervision. I have, however, frequently tried it in the course of my visits with young children and adults who have not commenced to write (allowing the latter to use slates at their desks instead of calling them up to the black board) with results which lead me to believe that, if fairly carried out, its adoption would be a considerable improvement on the plans I have usually seen followed.

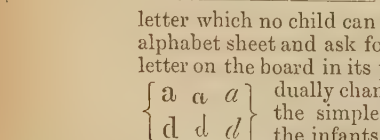
I will suppose the elder infants to form a class not exceeding 12 in number, to have had no instruction in writing, but to be able to read words of three or four letters, and to spell some of the easiest. The class would be formed in a semicircle in front of the board, and the first lesson in writing would consist of the practice of straight lines (upright), level (horizontal), slanting in either direction, and curved lines as distinguished from crooked ones.

The details of such a lesson will be found in several manuals of teaching, but the point which I desire to urge is that whatever is done should be done by a child, or by each child in turn; the teacher directing, suggesting, assisting, and making the correct forms for imitation *after* the children have done their best. Thus the teacher might say, "I want "some child to make a *straight* line on the board; hands up who can "do so." This being accomplished, "Now I want an *upright* straight "line; hands up who can make one." The child attempting will probably fail; then the teacher taking a straight stick will hold it standing on the floor in various positions till the class gets the idea of "upright," and a child can be found to transfer the idea to a line on the board. After several children have made lines more or less *upright*, the teacher makes the model line for a copy on the left hand top corner of the board, and passes on to a *level* (or horizontal) line; then to one slanting to *right* and to *left*; then to a *curved* line as distinguished from a *crooked* one. The infants might then be set down to imitate on slates these forms four or five times over, the place merely where each line of imitations is to begin being indicated by a mark.



As an early lesson on writing, the teacher might ask for one of the simplest and best known letters, as *o*, to be written on the board. This would doubtless be accomplished, in a manner, by several infants, and the teacher would then as before write it correctly for a copy, pointing out the differences between the correct form and the imperfect attempts of the infants. Other simple letters, as *i*, *t*, *l*, might then be taken in the same way. On coming to a letter which no child can form, say *a* or *d*, the teacher would take a printed alphabet sheet and ask for the letter to be pointed out; then forming the letter on the board in its printed form, he would show how it may be gradually changed into the written form. Some six or eight of the simplest letters might be taught in one lesson, and the infants well practised in naming them when pointed to. They would then be dismissed to imitate the characters several times on their slates. When well acquainted with the above simple letters, say in two or three lessons, the teacher would ask for the *letters* of a small word made of these simple letters only. One child might be called on to make a *p*, another an *a*, a third an *n*. The teacher would then write

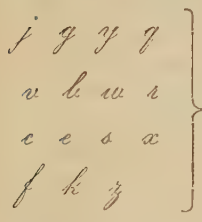




these letters combined, *pan*, on the top of the board, and would call on the children to read the letters and pronounce the word. So on with other small words, as *man, pin, pit, hot;* or this might be done so as to form a sentence, as *a man had a pin*, and the children would be sent to imitate this sentence on slates.

Gradually advancing, in the next lesson the teacher will name the small words, and call on each child to write one in turn, *a lad did hit him* —the teacher always correcting the children's faulty attempts by supplementing them with his own model writing. Thus at this early stage a child may be introduced to dictation, and his observation, memory, perception of sound, and faculty of imitation simultaneously exercised.

The children's acquaintance with the letters would be increased by three or four at a time, arranged with regard to their similarity of form, or progressive difficulty. They would thus, in hardly more than a dozen lessons, be able to write from dictation any word they can spell; their faults in formation of letters would be constantly corrected, they would gradually be led to write straight on the board and on their slates with letters of the same size and without the use of ruled lines, which I must say I look upon as an obstruction rather than an aid in teaching the art of writing. When the infants can write pretty well from dictation, using only the small characters, they might learn at the black board to form the capitals, figures, &c., and when acquainted with these, I should say they were fit to be transferred to the grown children's school, and begin the use of the pen.



App. II.
No. 13.

Appendix II.—No. 13.

Reports by Lieut.-Colonel Laurie for 1868.

Head Quarters, Madras,
29th June 1868.

Sir,

I have the honour to forward, for submission to His Royal Highness the Field Marshal Commanding-in-Chief, a letter received from the superintendent of army schools in this presidency, to the address of the Secretary to the Council of Military Education, forwarding a report of his inspection of the school attached to the Convalescent Depôt, Wellington.

I have, &c.
Wm. M'Cleverty, Lieut.-Gen.,
Commander-in-Chief.

The Adjutant General,
Horse Guards, London, S.W.

To the Secretary to the Council of Military Education, Great George Street, London, S.W.

Bangalore, 16th June 1868.

Sir,

I have the honour to forward, for submission to the Council of Military Education, this my report on the school and library of the Convalescent Depôt, Wellington, in the Neilgherries, inspected by me on the 20th of May 1868. Commencing my work as superintendent of army schools on the 1st April 1867, at Wellington, from the fact of there having been no adult school there at my first inspection, I have watched the progress of what I was fortunate in being the means of establishing with great interest. From May 1867, for a considerable portion of the official year, from 30 to 40 adults attended the school; eventually, however, the number declined. Certainly, the effective strength at the depôt fell off considerably, but I must in some measure attribute the falling off of the adult school to the former schoolmaster. Mr. Shannon, who promised well, is now with the 1st Royals at Cannanore, and Mr. Tapsall, a well tried Chelsea schoolmaster (army) from the above corps, appointed in his room. The children's school has always been in a promising condition; but I had strong hopes that with such a salubrious climate, and where men had such an opportunity of qualifying themselves for promotion on rejoining their regiments, with proper management the adult school would become highly distinguished. I do not despair yet of its being so; but much must ever depend on the master and local inspector. Men come here to recruit their health, and the duty is very slight; the general impression among the younger and least reflecting portion of them, when they get a little well, is that they should enjoy a holiday in a bracing climate while they can. To make them understand that a little "schooling" is not incompatible with such enjoyment, and that it will better them and give them chances of promotion during their service, cannot often be achieved by an ordinary teacher; he must be a steady and able man, who understands the solid advantages of a plain, practical military education. The commanding officer's influence will do much, but the example and precepts of an intelligent

epôt school, Wellington.

schoolmaster will do more. With feelings akin to these I commenced my second inspection of the depôt school at Wellington. The hours of attendance for the grown children's school I found to be from 9 till 12, and from 2 to 3; for the infant school, from 9 to 12 and from 2 till 3; for the Hindustani class, from 3 to 4; for the industrial school, from 3 to 5; and for the adults' evening class, from half-past 6 till 8. The effective strength was 17 sergeants, 13 corporals, 40 lance corporals, 193 privates, and 3 drummers and band boys. The grown children's school, at my inspection, was composed of 17 boys and 8 girls. On examination I found the writing of the first and second classes generally very fair. That of the oldest boy in the school, in No. VII., was very good; but more practice was required among the others in the easier numbers in the formation of the letters, to which I directed the master's attention. The writing from dictation of the first class from the First Book of the History of England, Part II., was fair; but the spelling required improvement. That of the second class, in the first part of the same work, was only pretty fair. The reading of the 1st and 2nd classes was good, and some questions I gave in English history were well and readily answered. I regretted to find little or no knowledge of the history of India. In geography the answers were, on the whole, satisfactory; but, as usual, too much attention had been paid to that of Europe, and too little to that of Asia or India. Some definitions were well given. I impressed on the master the necessity of at once procuring a map of India, and imparting some knowledge of the country in which they lived to his pupils; advising also the excellent plan of causing each pupil to draw a sketch map of the country on the black board, showing the position of the chief towns and stations. The 1st class in arithmetic and mensuration had gone as far as simple and compound proportion, and they had some little knowledge of field measuring, as regards triangles, trapezoids, trapeziums, &c. A question I gave in simple proportion was only well done by one intelligent boy; the others wanted practice. A good practical question I gave in compound proportion, regarding exchange from Indian into English money, was well done by one or two boys only. The intelligent boy above alluded to answered well some definitions in Euclid, and really seemed to understand what I explained to him of square and cube root. The second class, in arithmetic, extending only to compound division, did not shine to advantage. The 3rd class in reading, spelling, easy writing, Scripture history, and in the simple rules of arithmetic had made fair progress, and all seeming willing to learn; the grown children's school would, doubtless, greatly improve under the tuition of their new and experienced master. Above 9, were 14 boys and 7 girls; 24 boys and 26 girls, including the infant school, were on the school books. The age of the oldest boy was 15, and that of the oldest girl 12. The appearance of the grown children in school was quite satisfactory; they were clean and tidy looking; they were generally intelligent. The attendance, from sickness, had of late not been so regular as usual. There was a Sunday school. The Protestant chaplain also attended on Wednesday and Friday, and the Roman Catholic chaplain on Wednesday; a separate room being devoted to each chaplain. I have already partially accounted for the decline of the adult class at Wellington I was glad to be the means of forming. On Mr. Tapsall's joining the depôt, I at once wrote to him that such a state of things would never do: Wellington should have a good adult school, and I trusted that such would soon be formed. He at once endeavoured, through the staff officer, to secure the attendance

Hours of attendance.

Effective strength.

Grown children's school.

Examination.

Writing.

Reading and history.

Geography.

India.

Arithmetic.

Grown children's school.

Age.

Appearance.

Chaplains.

Adults.

App. II. No. 13.

of non-commissioned officers who had not been dismissed their own regimental schools, and arranged that lists were called for from the several divisions of the depôt of those privates who wished to attend. He also got the hours changed from 3 till 4 to half-past 6 to 8 p.m. These hours, it was thought, would suit better, as they would at least give the men inclined to be steady a choice between the school and canteen. On my arrival 19 men had entered their names as scholars for the evening class, but they had not yet been classified. I examined five of the adults; they were more or less advanced, and seemed willing to learn. I heard them read, and gave them a question or two in arithmetic, and encouraged them to persevere. They were men from the 91st and 3/60th. I pointed out the advantages of education, and doubtless at the next inspection there will be a good attendance of adults, provided the schoolmaster does not relax in the zeal with which he has commenced operations. Before leaving the large schoolroom I gave a boy, aged 13 (the best in arithmetic), a certificate of general qualification for a junior office in the Electric Telegraph Department. He seemed a very intelligent lad (James Shanahan), and was the son of Private Shanahan, of the 2/21st Fusiliers, who was here working out his discharge. The boy was likewise a student in the Hindustani class. The numbers attending the Moonshee's class were nine boys and six men; and they were making a little progress. Mr. Tapsall, the master, had received the usual reward for passing for staff, so was able to take an interest in this class. The Moonshee seemed an intelligent man, and up to his work. My opinion on teaching Hindustani in army schools I have already given in my general report for the past year. Seven boys and 18 girls composed the infant and industrial schools. The 1st class were only ready to be examined in words of three letters, and the 2nd class in words of two. I am sorry to say I was rather disappointed with the progress attained in this school. The children were very shy, would hardly speak, and seemed as quiet and diffident as their schoolmistress. The young pupils read a few words; but better things might have been expected. The industrial school or class was better; petticoats, frocks, and drawers were exhibited. More than 25 girls (including eight from Mr. Tapsall's school) I found were engaged in sewing, which was quite satisfactory. The work made up would be given away as prizes at the half-yearly examination in June. The attendance lately had not been regular from sickness and other causes. The infants were tidy looking, and some of them appeared intelligent. I have several times spoken most favourably of Mr. Tapsall; I believe he has been longer in the presidency than any other Chelsea-trained schoolmaster, having come out to India with the 1st battalion of the Royals in 1857. He has been 13 years a schoolmaster. The schoolmistress, Mrs. Wood, wife of a sergeant in the 18th Hussars, was only acting; she had been so for about 12 months. She was, I should say, hardly qualified for her work, though a decent-looking, quiet woman. I asked her if she would study, and try to pass for third-class schoolmistress. She thought she could; but I have since been informed that she has given up all hopes of applying for examination. A really good schoolmistress is much required at Wellington. Mrs. Houlihan, recently arrived from Rangoon (Burmah), I think would suit very well, and I have mentioned her name to army head quarters. Mrs. Wood, I understand, leaves Wellington in September, or as soon as the weather permits, with her husband.

Arrangements for procuring attendance.

Adults.

Examination.

Certificate of qualification.

Boy of the 2/21st Fusiliers.

Hindustani class.

Infant and industrial schools.

Attendance.

Appearance.

Schoolmaster and schoolmistress.

Assistant.

The assistant, Trumpet-major Mellar, 18th Hussars, who assisted Mr. Tapsall, particularly in the junior class, seemed an intelligent,

steady man, well fitted for his work. Of the excellent school accommodation at Wellington I spoke at some length in my report of April 1867. The principal large, lofty schoolroom, the two smaller adjoining, and the infant school room below, are all admirably adapted to educational purposes. The library and recreation room are in one room, very conveniently situated. Sergeant Robins, R.H.A., was the librarian, at 8 rs. a month, having charge of 1,475 volumes in four cases. Of the books, nearly 200 had been recommended by a committee to be struck off and sold. The remainder were generally of an interesting nature. Books were issued every day from 9 till 12, except on Sunday and Tuesday. There were 63 subscribers to the periodicals and newspapers—some of the best English being supplied—at 4 as. (6*d*. English) a month subscription, which was to be reduced to 2 as. In conclusion, the library and recreation room afforded considerable opportunities of intellectual entertainment and amusement to the soldier while recruiting his health amidst the bracing air of the Blue Mountains.

App. II.
No. 14.
School accommodation.
Library and recreation room.

I have, &c.
Wm. F. B. Laurie, Lieut.-Col.,
Superintendent Army Schools.

To the Secretary to the Council of Military Education, Great George Street, S.W., London.

Sir, Bangalore, 21st August 1868.

I have the honour to transmit, for the information of the Council of Military Education, the results of my inspection of the schools of the Royal Artillery and 16th (Queen's) Lancers in the Mysore division of the Madras army.

1. I inspected the Royal Artillery school on the 22d of July, 1868, consisting of batteries as per margin, the whole of the scholars being in the head quarters Royal Horse Artillery schoolroom, there being no separate school for each battery, or even two schools for the three batteries as at my inspection last year in April 1867. This is accounted for by the battery which left Bangalore early in the year for Burmah having had a qualified schoolmaster, an advantage which the Relieving Battery, D. 23d Brigade, did not possess. The A. 14th Brigade last year sent men to the school of the 2/10th Regiment, their proximity to the new barracks rendering such a step advisable, and since my inspection this year I learn that in the same barracks, now occupied by the 16th (Queen's) Lancers, non-commissioned officers and men of the A. Battery 14th Brigade Royal Artillery attend the army school of the cavalry regiment. Their date of admission was on the 29th July, and there are now four corporals, thirteen bombardiers (six of them acting), two trumpeters, and six gunners and drivers pursuing their studies under Mr. Davidson, schoolmaster of the Lancers. It is to be hoped when the new artillery school room, so much required, is erected at Bangalore there will be sufficient convenient school accommodation for the Royal Artillery without their being dependent on other corps, which must be injurious to educational progress as well as to military discipline.

Royal Artillery,
A. By. D. Brig. R. H. A.,
A. 14 Brig. R. A.,
D. 23d Brig. R. A.

For non-commissioned officers, gunners, and drivers the hours of attendance were from 6.30 p.m. to 8 p.m.; for the grown children for 9 to 12, and from 2 to 4, the same as the hours for the infant and industrial schools.

Hours of attendance.

App. II.

No. 13.

Grown children's school, Studies.

I commenced my inspection with the grown children's school, which according to the school state consisted of 32 boys and 13 girls. They were divided into four classes, and their studies included a considerable range of subjects. The 1st class had made progress in Scripture history, grammar (McLeod's), English history (Gleig's), part I.; they had also some knowledge of Indian history. In arithmetic they had progressed in decimal fractions, algebra as far as simple equations, and in Euclid the first 17 propositions of the first book had been studied. Some poetry (McLeod's, part II.), Hindustani. and singing completed their acquirements. The 4th (a junior class) had learned a portion of the New Testament, the Church Catechism, and definitions in grammar. McLeod's Reading Book, part II., writing from copy books, transcription, arithmetic as far as subtraction, and singing completed the lessons of this class.

Examination.

The writing of the four classes was very fair indeed, and the writing from dictation of three was on the whole very good. I was glad to find that Mr. Gibbs, the schoolmaster, was alive to the great importance of writing from dictation. In arithmetic some questions I gave three classes in the compound rules were well done. The junior or 4th class worked the simple rules in a creditable manner. In the 1st class the boys knew a few propositions and the definitions in Euclid; and two girls were learning Algebra, and could even do a simple equation. Attention had been paid to the important study of geography. I was shown some sketch maps of India, drawn and coloured by three of the boys, creditable alike to pupils and master. The answers of the 1st and 2nd classes to my questions on India and Europe were generally fair. The 3rd and 4th classes had some acquaintance with the definitions in geography and capitals of countries. The reading of the four classes in the history of England was quite satisfactory. The spelling also was good. Some good progress had been madein grammar, and recitation also was well done. A rather difficult poem was well recited by the senior classes, the 3rd and 4th also

Appearance.

reciting Heber's Missionary Hymn in a pleasing manner. On the whole I was very well pleased with the attainments of the grown children, who were well dressed, clean, and tidy looking, and some among them displaying considerable intelligence. The attendance was regular. A Sunday school under the chaplain gave further opportunities for religious instruction. There were 26 boys and

Age.

19 girls above nine years of age on the school books; the age of the oldest boy and that of the oldest girl was nearly 17 years, and that of the youngest boy and girl (including the infant shool) was nearly six years. Children of pensioners are included in the above numbers, and some of the children have to go a good distance to school.

Infant and industrial school.

Twenty-four boys and 21 girls, divded into four classes, were ready to be examined in the various subjects of a useful elementary English education for the young, the 1st class in the four simple rules of arithmetic; they had also been practised in mental arithmetic. They had made some progress in easy geography and history. The alphabet and notation comprised the lessons of the junior class.

Examination.

On examination I had reason to be satisfied with what I heard in the infant school; and from the high character of the schoolmistress, and judging from what I saw last year (when the school was more numerous and required more attention), I conceive the Royal Artillery infant school at Bangalore to be a highly creditable one. It would appear that there are not now so many young children available for school as before the departure of a former battery for Burmah at the beginning of the present year.

Those I saw seemed healthy, well-dressed children.

The attendance was regular save for sore eyes, which had been very prevalent shortly before my inspection.

Appearance.
Attendance.

The industrial work exhibited consisted of knitting, darning, sewing, needlework generally, tatting, crochet, and woolwork. The work seemed very good indeed, and several samplers in wool displayed considerable skill. Money for materials had been drawn up to 30th June, and the same made up had already been distributed as prizes to the most deserving children.

Industrial work.

Adult school.

Out of an effective strength of 28 sergeants, 17 corporals, 17 bombardiers, 219 gunners, 117 drivers, and 11 trumpeters, no sergeants and only 48 of the other ranks were present. The A. Battery D. Brigade Royal Horse Artillery furnished 21 for the inspection, the A. 14th Brigade 14, and the D. 23d Brigade 13. About 53 adults only appeared to be attending school. Last year I had to complain of the unsatisfactory attendance of the artillery, and I must still complain of it, but it is not the fault of the master. A zealous field officer of the regiment stated to me in his report for September 1867, that batteries in India are kept so short of men that it is difficult to get the daily routine of business done; and as it often happens they have only three nights in bed out of four, their only spare hours (viz., from 11 a.m. till 2 p.m.), especially during the hot season, they are disinclined to spend at school. At Bangalore they were having from four to five nights bed. The adults were divided into four classes; the 1st was reported ready to be examined in the whole of arithmetic, division of algebra, mensuration, writing from dictation, reading passages of ordinary difficulty, and writing from copy books; the 4th class had only the rudiments of arithmetic, could read easy sentences, and write copies. The 2nd and 3d classes had made a fair progress in arithmetic, writing, and history. The writing from dictation (by men from the three batteries) was pretty fair. Reading in the history of England was good. No geography was taught in the Royal Horse, nor in the other batteries; I immediately recommended the study, and told the master to indent at once for a map of India. Mr. Gibbs hitherto had taught the grown children from his own map. In arithmetic a question in compound division and one in proportion were well done. A few men displayed some proficiency in the higher rules, and I must say that the men generally evinced intelligence, and a desire to learn. I impressed on the master the importance of teaching the ledger and savings banks accounts, so as to qualify the men for office employment. Three men—corporal Boyle, Royal Horse Artillery, and gunners Ward and Mahoney, of the D. 23d—had recently passed an examination at the Chief Engineering College, which was highly creditable. What reflects high credit on Mr. Gibbs is the fact that in 1864 corporal Boyle could not sign his name. He seemed highly grateful to his master for the instruction received, and which he appeared to know how to value.

Effective strength.

R. A. attendance.

Opinion of a field officer.

Examination.

Map of India.

High proficiency.

No special class.

There was no special class in the Royal Artillery, which I regretted.

Schoolmaster and schoolmistress.

The zeal and merits of Mr. Gibbs, third class and of some 12 years' standing, have attracted my attention; I therefore, in my capacity of superintendent of army schools, recommended him to the government of Madras through his Excellency the Commander-in-Chief for promotion to second class, as I conceive him to be well worthy of the same. He is well spoken of by his present and late commanding officers; and while at Cuddalore he was styled "an able master" by a former Governor of Madras. Having adhered as a local schoolmaster to the old rules, I presume that thus bringing him for-

App. II. No. 13. Assistants.

ward is his only chance of promotion. The schoolmistress, Mrs. Mannion, continues to give every satisfaction, and is admirably adapted for her post. An assistant master is much required for the Royal Artillery school, but as yet none of the men can be found willing to take or capable for the post at Bangalore, and none can be spared from other quarters. I trust that this want may be supplied shortly. Sarah Coghlan, monitress, continues to give much satisfaction. The pay of 3rs. 4as. 3p. is far too small. She intends going up to be examined for third-class schoolmistress at an early period.

School accommodation.

The school accommodation, as I had occasion also to report last year, is very bad in every way; and the sooner the new artillery school room or school rooms for the artillery here (which want has been already alluded to) the better for the cause of military education in this distinguished corps.

Library.

There is a good library with the head quarters D. brigade.

Lectures.

The recent breaking up and division of the garrison library has done much to vary the reading of regimental as well as to increase their stock. I regret that I found the Royal Horse Artilery at Bangalore after my inspection last year indifferent to lectures. Major R. Campbell, however, has given them readings from time to time with varied success. It is to be hoped when the (for India) new system for circulating magic lantern slides is brought into full play there will be a greater wish among the artillery for lectures.

Certificates of education.

After my inspection I granted first-class certificates to acting bombardier R. W. Ward, of the D. Battery 23d Brigade Royal Artillery, and to bombardier John O'Toole, A. Battery D. Brigade Royal Horse Artillery, both very intelligent men. I have granted no other certificates to the artillery. I drew the attention of Mr. Gibbs to sending in regularly the results of his half-yearly examinations, as per Horse Guards' General Order, No. 854, dated 18th October, 1864, and to send me a copy of the form forwarded to the Council. As all the necessary forms* and books will, I trust, soon be supplied, there will be no difficulty in forwarding these half-yearly returns experienced by any corps in the presidency. I may remark, in conclusion of this portion of my inspection report, that the results as regards the Royal Artillery at Bangalore seem to me more creditable in every way than they were last year, and doubtless every year will bring marked improvement.

16th (Queen's) Lancers. Hours of attendance.

2. I inspected the school of the 16th (Queen's) Lancers on the 24th July 1868. For the grown children the hours of attendance were from half-past 9 to half-past 11, for the adult class from half-past 11 to half-past 12, for the trumpeters from 12 to half-past 12, and for the infant school and industrial class from half-past 9 to half-past 11, and from 2 to 4 respectively.

Adults.

I commenced with the adult school on this occasion.

Effective strength.

The effective strength I found to consist of 35 sergeants, 28 corporals, 49 lance corporals, 339 privates, and 8 drummers and band boys; 14 sergeants, 16 corporals, 28 lance corporals, and 15 privates and trumpeters, making a total of 73, appeared in the school state delivered to me on the day of inspection,

Attendance.

but not nearly that number were present. The average attendance I found to be very unsatisfactory; sometimes as small as five or six a day. While nearly every other European corps in the presidency has shown a considerable increased rate of attendance, I regret that such a fine body of men as the Lancers should be behind. Perhaps this may in some measure be accounted for by the change of schoolmaster, Mr. Devereux, from Chelsea, having been on the

* These have been already sanctioned by G. O. C. C., No. 82., of 30th June 1868.

score of merit ordered to Bombay, and the present master (formerly local) not yet quite understanding the mode of winning such men to and keeping them at school; but doubtless much could be done to increase the attendance by the commanding officer of the regiment. Making every allowance for the vast amount of work for cavalry the attendance is very far from what it should be. Although he has been at Bangalore with the Lancers for some months the schoolmaster, I understand, had not even seen more than half the men present at my inspection.* To expect much progress under such circumstances would, I humbly conceive, be out of the question; and I really was astonished to find what knowledge came under my notice. The men being generally intelligent may account for this, but, as I have ever conceived, rough intelligence without the power of education to guide it loses very much of its use in the army. There were three classes to be examined. The writing, chiefly in No. VII. copy book, was very fair. The writing from dictation was very good. In arithmetic the compound rules and some questions in vulgar and decimal fractions were fairly answered. The study of interest and savings banks accounts appeared to have been neglected. No geography was taught, which I much regretted. I remarked to Mr. Davidson the necessity of immediately commencing this important study, that of India in particular. The reading from the first part of the History of England was very good. The men showed intelligence, and seemed willing to learn. There was no special class in the Lancers, and no surveying was taught.

Examination.

No geography.

No special class.

No surveying.

There were 10 boys and 12 girls in the grown children's school, divided into three classes. The writing was good, and the reading from the first part of the History of England was quite satisfactory. The spelling was good. A regular Sunday school was held at the church under the chaplain, who also visited the children twice a week for religious instruction. The arithmetic was pretty good, the older children in the compound and the younger in the simple rules. In geography the definitions were well answered. The children gave some fair answers in early English history, and also in Scripture history. The pupils seemed neat and clean, and were generally intelligent. The age of the oldest boy was 13 years and 7 months, and that of the oldest girl 15 years. Above 9 there were four boys and seven girls on the school books, and under 6 (including the infant school) there were nine boys and eleven girls. The attendance was not very regular. The infant school consisted of 15 boys and 17 girls. Their qualifications were in easy reading, forming letters and figures, arithmetic on ball-frame, Bible and object lessons according to classification. The two classes were divided into sections. In the very simple branches of an English education I found the little children had made fair progress. A little sickness had made the attendance not so regular of late. The *pacherie*, or married quarters, where the infant school was held, was not considered very healthy, and it was by no means well adapted for an infant school. The children were clean; and the specimens of industrial work consisted of a few chemises, aprons, and gowns, but the greater part of the cloth, &c. purchased was not made up. The work appeared good, and Mrs. Mines, the schoolmistress, seemed to take a pride in it. About 80 rupees a year was drawn. At present only 17 girls are doing needlework. Mr. Davidson, the schoolmaster of the Lancers, is an able, intelligent man, and good teacher.

Grown children's school.

Examination.

Appearance.

Age.

Attendance.

Infant and industrial schools.

Lessons.

Position of school.

Appearance of children.

Industrial work.

Schoolmaster.

* "Several of the non-commissioned officers and men," writes Mr. Davidson, "were unclassified, nothing being known by me of the men's attainments, they not having attended twice in three months."

App. II. No. 13.

Old and new rules.

He chose to adopt the new regulations of May 1863, having previously served with the artillery, &c. as a local schoolmaster under the old. As he and others of the same class were uncertain about their position under the new rules, I deemed it advisable to write to army head quarters with a view to getting the names of those who were under the new and old rules published in General Orders. I was informed that the names of those who had elected the school regulations of 1863, "having been communicated to Government and "the pay department, and also to the home authorities, it was not "considered necessary to publish them in General Orders." I presume, therefore, that schoolmasters who have elected the new regulations in India as regards pay, pension, and promotion will be treated in every way like Chelsea schoolmasters.

Schoolmistress.

The schoolmistress, Mrs. Mines, wife of a non-commissioned officer in the Lancers, seemed well up to her work, and continued to give satisfaction. She appeared to have a kind manner with little children.

Assistant.

Private Jones, of the Lancers, had been assistant for about 2½ years. Last year I granted him a first-class certificate. He is an active, intelligent man, and once visited me with the intention of my furthering his views to get into the Engineering College, Madras, for the Public Works Department; but he seems now to have abandoned the idea.

School accommodation.

The school accommodation, being in the lofty new barracks, was sufficient for the adults, but not for the grown children and infants. The new school room for the Lancers—alluded to in my annual report—will be a great boon, and materially assist the cause of education. The bad system of having the infant school in the *pacherie* will then be entirely eradicated.

Library and recreation room.

The library and recreation room were in the same room, an upstairs building, very conveniently situated, with a verandah for coffee, &c. for the men. The regimental library consisted of 1,829 volumes of general literature—I saw many very interesting volumes—so the men can indulge a love of reading to any amount; 609 volumes had been received on the breaking up of the garrison lending library. The subscription was, for an officer 8 as., a sergeant 4 as., and a private 3 as. There was a very good attendance to read the periodicals (of which the best were taken in), averaging 200 a day. The recreation room was furnished with draughts, chess, and dominoes. The library had 389 subscribers.

Games.

Lectures.

All the arrangements regarding library and recreation room appeared to be very good. Last year I gave the men a lecture on Charles XII. of Sweden, which was well attended, and received with considerable enthusiasm. I regret that my numerous duties during the past year have prevented me from writing more lectures for the European soldiery of this army.

Certificates of education.

Shortly after my inspection, I granted five first-class certificates to qualified men of the Lancers —to one corporal, two lance corporals, and two privates—who passed the required examination very creditably.

Conclusion.

Having, I trust, during a considerable period done something towards amalgamating the educational establishments, Indian and English, to this my last report I shall merely add, that I trust my labours to please the Council have been satisfactory; and being obliged to give up this appointment shall never prevent my taking a deep interest in the growth of military education, particularly in India.

I have, &c.

Wm. F. B. Laurie, Lieut.-Col.,
Superintendent Army Schools.

Appendix II.—No. 14.

App. II.
No. 14.

Report by Major Grove for 1868.

No. 73.—From the Superintendent of Army Schools, Madras Presidency, Bangalore.

Sir, Bangalore, 8th October 1868.

I have the honour to transmit, for submission to the Council of Military Education, the report of my inspection of the army schools of the regiments and depôts (marginally exhibited) of the centre division Madras presidency, India.

European Veteran Schools, Palaveram.
European Depôt, Poonamallee.
No. 2 Battery 5th Brigade } Saint Thomas Mount.
„ 3 „ 5th „ }
„ B „ 20th „ }
„ B „ 23rd „ }
H.M. 45th Regiment of Foot.

2. These reports are prepared in much the same manner as those of my predecessor's (Lieutenant-Colonel Laurie) were, and generally resemble the reports on Government schools drawn up by the civil inspectors. But having come to learn, subsequent to my inspections under report, that the Council has drawn up a form of report which is in use among the assistant inspectors in Europe I have addressed the superintendents of the Bombay and Bengal presidency on the subject, and requested them to send me specimens of those forms if they have any. Should the forms arrive in time it will be my endeavour to prepare my next reports in accordance with those forms.

I have the honour to be,
Sir,
Your most obedient servant,
H. L. Grove, Major,
Superintendent of Army Schools,
Madras Presidency.

To the Secretary to the
Council of Military Education.

Army Schools.

European Veteran Company—Commanded by Lieutenant Colonel Dyer.

Report of the Boys' School after Inspection by Major H. L. Grove on the 14th and 15th September 1868.

Station, Palaveram - Army Schoolmaster, T. Sherwood, 2nd class.
Madras Presidency - „ W. Abbott.

Present at Examinations.

1st Class	27	Boys.
2nd Class	29	„
3rd Class	34	„
	90	

App. II.

1st Class.

No. 14.

Scripture. The chaplain at the neighbouring station, St. Thomas Mount, occasionally comes over and affords some instruction. On this present occasion schoolmaster Sherwood put a number of questions which were readily answered. The replies elicited satisfied me that this subject was well taught.

Writing. The penmanship of all was good, of some very much so. Copy books were remarkably clean.

Dictation. With this I was quite satisfied; the handwriting was good, and very few errors in spelling were made.

Poetry. Wordsworth's "Fidelity," Rogers' "Genevra," and several other pieces were recited with great accuracy and considerable expression.

Grammar. Considerable familiarity with rules was shown. The parsing and analysis of sentences was very good. The errors in a number of ungrammatical sentences written on the black board were readily pointed out, and as readily corrected.

Geography. This class was closely questioned in the geography of Europe and India. The replies were most praiseworthy.

Arithmetic. A number of examples in the more advanced rules were worked with ease and neatness.

Algebra. All knew something of the subject, and some worked simple equations with great readiness.

Euclid. The two senior boys had commenced the second book; the others had mastered the first 15 propositions. Their acquaintance with Euclid was most creditable to themselves and to their master. The two lads alluded to are far advanced in most branches of study, and will, I doubt not, succeed well in afterlife.

2nd Class.

Scripture. The answers were fairly given, but not so well as in the 1st class.

Writing. Was good of its kind, and very clean.

Dictation. Some of the upper boys did very well. The work of the lower boys was inferior. However, the proportion of errors in spelling was not excessive.

Grammar. This class possessed a very elementary knowledge, and some of the boys were rather uncertain and vague in their replies.

Arithmetic. Some few could work vulgar fractions fairly; the rest reduction and the compound rules. The result was fair on the whole.

History. Some few boys were well up, but generally the class may be said to be rather backward.

3rd Class.

Scripture. This lesson was answered pretty well.

Writing. Was, for the age of the boys, good.

Arithmetic. A good acquaintance with the four simple rules and the multiplication table was evinced.

Geography. This class has a fair knowledge of the outlines of the geography of India and England, and of definitions.

Reading. They read distinctly and without hesitation, and showed that they generally understood the meaning of the words met in the text and the parts of speech.

Dictation. The writing from dictation and spelling was most creditable.

Want of a third master. When it is considered how fully the time of the two masters is occupied by the large 1st and 2nd classes the progress of the 3rd class, under such difficulties, speaks much for the zeal and skill of the masters who are over-worked, and sadly require some help, which has been repeatedly

applied for through the commanding officer and denied on the score that none was available.

The commanding officer has the highest opinion of the worth of his schoolmasters. They are both able men and well deserve the praise bestowed on them by the chaplains and by my predecessor. Mr. Sherwood's method of teaching commanded my highest approbation. Character of masters.

Both boys and girls are collectively instructed in vocal music (by ear) by Mr. Abbott, who is a good musician, and accompanies them on his own harmonium. I was much surprised and pleased with the excellent music I heard. Singing.

The boys' school is temporarily held in a barrack, which is available for six months in the year, and is, everything considered, suitable for the purpose. But this barrack will shortly be again required by the military authorities for the next six months, during which period it is proposed to rent the most commodious dwelling house available. The building in which this school was formerly held will no longer accommodate it, as the influx of Roman Catholics consequent on a recent order, has nearly doubled the number of pupils. These remarks apply equally to the girls' school. As the veterans will be absorbed or die out in the course of 20 or 30 years the authorities are unwilling, I understand, to go to the expense of building a schoolhouse. School accommodation.

No monthly or half-yearly reports having been sent to this office I arranged with the commanding officer that they should be furnished for the future. Reports.

The boys were neatly clad, clean, well behaved, and of healthy appearance. Appearance of boys.

One blackboard for so large a school is manifestly insufficient; another is greatly required. Black board wanted.

The fathers of most of the children who attend these schools being veterans, and consequently not liable to be moved about as men attached to regiments are, there is comparatively little fluctuation among the children who generally remain at the school for many years, and by regular attendance give the masters the opportunity of leading them on to the higher branches of education. The school is highly appreciated by the parents who take care that their children are regular in their attendances. One other feature of these schools that requires notice is the age of some of the pupils. I observed several who were really grown up young men and women, and I stand in doubt as to whether it is desired that children should remain so long at this school as these do at present. One result of their doing so is that the school is overgrown; the classes are too large, and the powers of the masters and mistresses are overtaxed. Attendance.

Girls' School.

Schoolmistress - - Elizabeth Sturt.
Assistant ditto - - Elizabeth Clifford. } Untrained.

Monitresses - { Maria Hines. Mary Ann Marrow. Harriet Wilkins.

Present at Examination.

1st Class - - - - -	23
2nd do. - - - - -	16
3rd do. - - - - -	19
	58

App. II.
No. 14.

First Class.

In scripture this class gave intelligent answers; in arithmetic they did pretty well; in Indian geography they were deficient, but in the geography of Africa they were more successful. Of definitions the younger girls knew very little. The handwriting in dictation was good; so was the spelling and punctuation. They ought to have been able to parse and to quote the rules of syntax more readily than they did. In history they were backward. Their copy books were very clean, and I noticed a few very good specimens of penmanship.

Second Class.

This class recited "Prayer," by Montgomery, "The Better Land," by Mrs. Hemans, and several other pieces of poetry, with considerable ability. The reading and spelling were good. Easy questions in grammar were answered with difficulty. In dictation the writing was indifferent, but the spelling and punctuation creditable.

Third Class.

In dictation both the writing and spelling were good. The mental arithmetic was a failure, and the multiplication tables were very imperfectly known.

INFANT SCHOOL.

Present for Examination.

1st Class - - - - -	30
2nd do. - - - - -	20
3rd do. - - - - -	28
	78

First class was fairly acquainted with the outlines of Scripture history. They read well and readily, and spelt the words met with in the lesson. They learn to sing, and sang with much spirit. The writing from dictation on slates was as good as could be expected. The second and third classes were well taught in arithmetic, and were remarkably well acquainted with the multiplication table. Owing to Mrs. Clifford (who has charge of this school, and has only lately been employed) not being acquainted with the use of the clock face and ball frame, these important subjects have not, I regret to say, been taught. I trust this omission will shortly be rectified.

INDUSTRIAL SCHOOL.

Work.

I was shewn 48 shirts, 27 dresses, and a number of petticoats, all the work of these children, and very highly creditable it was. Some of the older girls learn to cut out also. It would be well, I think, if they were taught to darn, patch, and to knit stockings.

Appearance of the children.

All the girls and infants were very clean, tidy, and well mannered: they were generally intelligent looking and healthy.

I must confess I was disappointed with the schoolmistress' manner and method of teaching. She struck me as being both diffident and deficient in ability; but I was assured by Lieut.-Colonel Dyer, who with his family takes a lively personal interest in all the schools, that she was unusually nervous on the occasion of my inspection. I have urged her to pass the examination for third class schoolmistress, which she has promised to try to do at the end of this year. The commanding officer and chaplain united in commending her as a woman of great respectability and excellent moral character. Schoolmistress.

Mrs. Clifford seems to be active and energetic, and generally well fitted for the post she holds. Assistant schoolmistress.

With the monitresses I was much pleased, with Maria Hines especially. Another monitress is sadly wanted, to the charge of the third class in the infant school. I was informed that several unsuccessful applications for another had been made. Sophia Conray, one of the elder girls, is well fitted for that post. I beg again to state that the educational staff of these schools is below the proper strength. Monitresses.

European Depôt of Poonamullee, commanded by Colonel J. B. Spurgin.

Report of the grown Children's School, after inspection by Major H. L. Grove, on the 16th September 1868.

Station, Poonamullee. Army Schoolmaster, H. W. Smith.
Schoolmistress, W. B. Crowe, 2nd class.
Monitress, Emma Vaughan.

Grown Children present at Examination.

—	Boys.	Girls.	—
1st Class - -	5	8	{ Under schoolmasters.
2nd Class - -	10	4	
3rd Class - -	6	16	„ schoolmistresses.
Total - -	21	28	

First Class.

The Protestant children of this class were closely questioned by schoolmaster Smith in Exodus and in the life of St. Paul, and their answers satisfied me that they had been well taught, and had a good acquaintance with the subject. Scripture.

The penmanship of two boys was really very good; that of the girls poor. It might have been better. The copy books were very clean. Writing.

Was well done. The pronunciation accurate, and free from any defect. Reading.

"Man's Aberration from God," "The Captivity of John of France," and "The Bible," were recited with considerable taste and intelligence. Poetry.

In the reign of John I. the upper children acquitted themselves creditably. The lower children appeared to know but little. History.

App. II. No. 14.

Geography. The same remark applies to the examination in geography. I regret to say that there is no map of India in this school, and that the geography of India is not taught. As the large proportion of the children attending this school will pass their lives in this country, it is much to be desired that they should obtain an intelligent acquaintance with the geography of the land in which they live.

Grammar. A moderate acquaintance with analysis of sentence, parsing, and rules of syntax was shown.

Dictation. The handwriting was good, spelling excellent, and punctuation fair.

Arithmetic. To the two top boys two sums in simple interest were given. In the first sum (English money) one boy failed. In the second (Indian money) both failed completely. To the others three examples in simple proportion were given. Five worked all the examples right; three boys and four girls worked two sums in compound division successfully; and a third example three-quarters of the class worked correctly. This class was rather slow in working arithmetic.

Vocal music. The grown children are all taught to sing, and the result does Mr. Smith much credit.

Second Class.

Scripture. This class was fairly conversant with the life and travels of St. Paul.

Writing. Copybooks V. and VI. were written with a bold, clear hand, and the books, with one exception, were very clean.

Dictation. The first four lines of Part I. Gleig's History of England were written from dictation with 18 errors in spelling, of which five were made by one child. The handwriting in all but two instances was very creditable, but many mistakes in the use of capital letters at the beginning of words were made.

Geography. The outlines of the geography of Europe were pretty well known, but some of the children were very backward.

Reading. No reading books having been supplied to the school, I was obliged to examine this class at page 21 Part I. of History England. This was read in a clear, distinct tone, without hesitation.

History. The questions given were fairly answered.

Arithmetic. One sum in simple multiplication was correctly worked by all. In the first example of short division five failed; in the second 4. In the first example in compound multiplication 1 failed; in the second 3. Three of this class could not work anything beyond short division.

Third Class.

The upper children were writing in copybooks V. and VI., the lower in No. IV. The handwriting of one child was very good, and of the others fair. Twelve tried some example in arithmetic, with the following result:—

1st	example	in addition,	8	failed.
2nd	do.	do.	1	do.
1st	do.	subtraction,	2	do.
2nd	do.	do.	3	do.

They read in McLeod's 2nd Book (with two exceptions) with considerable fluency, spelt well, and were fairly acquainted with the parts of speech.

INFANT SCHOOL.

17 *Boys*, 14 *Girls*.

Both sections were collectively catechised on the creation of man, the Flood, and the nativity of Christ, and gave correct and ready answers, with a good deal of liveliness and brightness. They had a fair idea of

the shape of the earth, and of the several divisions of land and water. In simple easy sums in addition and in mental arithmetic they did well. The lessons on the clock-face and ball-frame were only pretty well understood. Schoolmistress Crowe gave some good object lessons, and elicited such smart and intelligent answers as showed they understood what they had learnt. They sang in a pleasant manner.

Industrial School.

A number of dresses, chemises, and samplers worked, and stockings knitted by the children were exhibited. They satisfied me that this important portion of the children's training was well attended to.

I was glad to observe that all the children of these schools were very clean, orderly, and respectably dressed. Appearance of children.

I was pleased with the schoolrooms, which were commodious, well ventilated, and clean. School accommodation.

Schoolmaster Smith deserves much credit for the care with which he has kept up the good name of his school. The commanding officer expressed to me his entire approbation of this schoolmaster's conduct and attention to his duty. Mrs. Crowe is an able schoolmistress. She had only lately returned from sick leave. I was satisfied with the monitress. School teachers.

In conclusion, I should remark that the children of European pensioners resident at the station form the nucleus of the school. The number of children from the depôt is constantly fluctuating, few of them remain long enough to learn much.

No. 2 battery, 5th brigade Royal Artillery
" 3 " " "
" B " 20th " "
" B " 23d " "
} Commanded by Colonel G. B. Shakespear.

Report of the adult school, after inspection by Major H. L. Grove on the 17th September 1868.

Station—St. Thomas Mount, Madras Presidency.

Schoolmaster—Robert Gooding.

Assistant-Schoolmaster—A. C. Sherwood.
Do. do. D. R. King.

Effective Strength of Force.

Staff Serjeants.	Serjeants.	Corporals and Bombardiers.	Gunners and Drivers.	Trumpeters.	Farriers.	Shoeing Smith.	Collar Maker.	Wheeler.	Total.
14	24	47	422	12	2	4	2	2	529

Statistical Return of Men who can read and write, &c.

	Both read and write.		Can read, but not write.		Can neither read nor write.		Total strength of Battery.
	Serjeants and Rank and File.	Gunners and Drivers.	Serjeants and Rank and File.	Gunners and Drivers.	Serjeants and Rank and File.	Gunners and Drivers.	
B. Battery, 20th Brigade, Royal Artillery	22	107	—	4	—	5	138
B. „ 23rd „ „	19	102	—	7	—	13	141
3rd „ 5th „ „	11	67	—	—	—	—	78
2nd „ 5th „ „	15	68	—	2	—	2	87

Present at Examination.

1st Class	18
2nd do.	10
3rd do.	6
	34

1st Class.

Read from Supplement to 4th Book of Lessons, "Anecdotes of a Voyage round the World," well. Some men read very well. Most intelligent answers were given to questions put on geographical and other subjects suggested by the text. Reading.

The first seven lines of the same lesson were written from dictation. The work of a few was entirely free from error; the rest made forty mistakes in spelling. Dictation.

Of two easy examples in proportion, 10 men worked both correctly; 6 worked one example, and 2 failed entirely. Arithmetic.

The penmanship of six or eight men was good, and of the rest indifferent. Writing.

2nd Class.

Read from Gleig's English History with varied success. Reading.

A few lines taken from the 4th Book of Lessons were written from dictation in a legible, clear hand. Writing.

In two examples in compound multiplication, 4 mistakes were made; and in two in compound division, 11 mistakes. Arithmetic.

3rd Class.

Copy books No. V. and VI. were used. The handwriting of three men was very good. Writing.

One man could work sums in addition only. An example in the four simple rules was given to the rest, but no one succeeded in working all four examples correctly. Arithmetic.

GROWN CHILDREN'S SCHOOL.

Boys.

Present for examination, 54.

Age of eldest boy, 16.

The 1st and 2nd Classes were examined in Scripture by the Protestant chaplain, who takes an active part in the religious instruction given in these schools. They answered readily, and with considerable intelligence; could quote texts that bore on the subject, and gave satisfactory proof of their having been well taught. Scripture.

1st Class (8 boys) wrote from dictation half a page from Supplement to 4th Book, and, exclusive of two which were very bad, made 20 mistakes in spelling. With three exceptions, the writing was very good; punctuation not being taught, was defective. Dictation.

Their acquaintance with the geography of Europe was of various degrees. Some difficulty was experienced in pointing out the capital towns on the map. No instruction has been given in the geography or in the map of India, which is much to be regretted. Geography.

App. II. No. 14.

Their acquaintance with grammar was very elementary, and requires improvement.

Grammar.

History.

In the History of England the answers were creditable.

Arithmetic.

In arithmetic the first seven boys worked a sum in vulgar fractions and in interest correctly. Of thirteen boys who worked an example in reduction one was wrong, but in an example of compound multiplication only one was right. Several boys did not appear to understand the mode of working the examples.

Writing.

All wrote very creditably. I noticed several instances of excellent penmanship.

1st Class (10 *boys*).

Reading.

"The Mantes," in the 4th Reading Book was very correctly and intelligently read, and the meaning of the words in the passage, except the more difficult ones, generally well understood by the upper boys.

Poetry.

"Boadicea," "The Notes of Birds," and "An Indian's Gratitude" (from the 1st Poetical Reading Book) were recited with much expression.

In five lines of 1st Part of Gleig's History of England, written from dictation, the average number of errors made was 3·5. Handwriting was fair. Second Class wrote one third of a page dictated from 2nd Sequel to 2nd Book. The average rate of errors in spelling was 2·1.

3rd and 4th Classes (17 *boys*).

Reading.

Read at Chapter VII. Part I., Gleig's History of England, correctly and distinctly. The spelling of the upper boys was pretty good. General knowledge of the subject read, fair; of the lower boys, indifferent. Of the meaning of words the knowledge was defective. An example of simple multiplication was correctly worked by 6 out of 15 boys. In an

Arithmetic.

example of compound multiplication only 4 were right. In another, 7 out of 10 were right; and in a third only 1 out of 10 was right. Five boys in the Fourth Class worked an example in addition without mistake; with a sum in subtraction 3 were right.

5th Class.

Reading.

Eleven boys read the first seven pages of "My First Book" in a very creditable manner. The spelling was excellent.

Arithmetic.

Of the multiplication tables only 2 boys knew anything, and those two were acquainted with them only as far as 8 times. Of 7 boys who worked 2 sums in addition 5 were right. Of 3 who were set 2 examples on subtraction 1 failed.

Writing.

A few lines were dictated from the Lesson Book, and fairly taken down on slates. The writing was pretty good.

Scripture.

Questions on the simple facts in the History of our Lord were very imperfectly answered. Some children could give no answer whatever. This class had been recently drafted from the Infant School, and did not reflect credit on the schoolmistress.

GIRLS' SCHOOL.

Present for Examination.

1st Class	12
2nd „	19
3rd „	13
	44

Schoolmistress—Mrs. E. Gooding, 3rd Class.
„ Mrs. L. Barrenger „
Monitress—Agnes Bamford.
„ Esther Warwick.
„ Margaret Peach.

App. II.
No. 14.

1st Class.

At page 112 of Supplement to 4th Book the upper four girls read well and intelligently; the rest very badly. Meaning of the words in lesson generally understood, except by the lower girls. Spelling was very good. Very few of these girls could name the parts of speech. Reading.

With two marked exceptions the handwriting was indifferent. Writing from dictation was creditably done; by some very much so. Writing.

Of the upper four girls two failed in the first example of compound multiplication, one in the second; in reduction one failed. The lower girls worked in long division and reduction with indifferent success. Arithmetic.

The upper four girls knew something of definitions and of the geography of Europe. The rest knew nothing of either subject; some of them struck me as being deficient in intelligence. Geography.

INFANT SCHOOL.

The children of the first section could sing a little. They read Lesson V. of "Simple Truths" slowly and with some difficulty. The four upper children could spell the words of one syllable in the lesson, the others failed. Any intelligent comprehension of the subject read was confined to the upper children. They wrote short words on the slate very fairly. Not having been taught the multiplication tables they knew nothing of them. It is matter for regret that these infants have received no object lessons, nor instruction in the use of the clock-face and ball-frame.

INDUSTRIAL SCHOOL.

Some well-sewn dresses and petticoats, the work of the children, were exhibited. It would be well if instruction in knitting, darning, and patching were given.

With one exception, the children in the Infant School were clean and tidily dressed. The girls were neat and well behaved. In the Boys' School only one boy was dirty and badly dressed. Appearance of children.

Schoolmaster Gooding arrived from England with the 5th Brigade last January. He was highly spoken of both by the commanding officer and by the chaplain, as an able schoolmaster and a man of excellent character. I was much pleased with him in every respect. Owing to the prevalence of smallpox these schools were closed for two months, and had been reopened very shortly before my inspection was made. Report on master and mistresses.

Mrs. Gooding (wife of schoolmaster) has charge of the grown girls' school, and a general supervision of the Infant School. She has a very pleasant manner with her pupils, is self-composed, and apparently very well fitted for the post she fills. Mrs. Barringer did not strike me as being a very efficient teacher, but I understood from the chaplain that he considered her to be a woman of excellent character.

A special class, comprising two non-commissioned officers and four gunners was commenced one week prior to my inspection. Special class.

These schools are located in a noble building, which is in every respect well suited for the purpose for which it was erected. Accommodation.

This is a most commodious, well ventilated, and comfortable building. Soldiers' institutes.

App. II. No. 14.

It consists of two reading rooms, two rooms for games, and a refreshment-room. The games are, one billiard table, two bagatelle tables, chess, dominoes, draughts, pool, and backgammon. I understood from the commanding officer that, in consequence of the men being required to appear in uniform, the recreation rooms were not as well attended as was desirable.

Library. This consists of 640 vols. belonging to the Institute, and 2,069 vols. received from the late Cantonment Library. They were all in excellent order and repair. There were 239 subscribers, and 260 vols. were out on loan at the time of my inspection.

Lectures. No lectures have been given during the past twelve months.

The 45th Regiment of Foot, commanded by Major Hobbs, No. 1 Battery and 20th Brigade.

Report of the Adult School after inspection by Major H. L. Grove, Superintendent of Army Schools, Madras Presidency, on the 18th September 1868.

Station—Fort St. George. Schoolmaster—David Morrison.

Soldier assistants - - - 6

Effective Strength of Regiment (45th Regiment).

Serjeants.	Corporal.	Lance Corporal.	Privates.	Drummers and Band Boys.	Total.
43	31	57	567	21	719

1st Class, 26 Men.

Arithmetic. Three examples in reduction, three in compound division, two in fractions, two in proportion, and two in interest were worked with the following results:—

Seven men worked all the examples right.				
Seven	„	one	„	wrong.
Four	„	two	„	„
Two	„	three	„	„
Six	„	altogether failed.		

The work of the first-mentioned 14 men was very neatly done; two easy sums in vulgar fractions were given to 13 men, who readily worked them without mistake. Sergeant Clarke worked several examples in decimals correctly and neatly.

Reading. A portion of "A Voyage Round the World" from Supplement to Fourth Book was, with one exception, read well.

Writing. The first seven lines of the same reading lesson were written from dictation. Exclusive of seven men who did very badly 25 errors in spelling were made. Of the writing one-third was very good, one-third fair, and the rest very indifferent.

2nd Class, 9 Men.

Arithmetic. Two examples in simple subtraction, multiplication, and reduction were worked with only one error.

This class read in the same passage as the 1st class. The reading was pretty good. In most instances intelligent answers to questions on the passage read were given. Spelling was indifferent. Reading.
Was pretty good. Writing.

3rd Class, 8 *Men.*

This class read at page 85 of No. 2 Sequel generally very fairly, with the exception of one man who completely failed. The spelling was fair, and the meaning of words met with in the passage very imperfectly understood. Reading.
As good as might be expected; could also write from dictation easy sentences, and exhibited varied degrees of acquaintance with the four simple rules of arithmetic. Writing. Arithmetic.

4th Class, 18 *Men.*

Read the account of America at page 30 of the Book for Adults. About one half read and spelt pretty well, and gave intelligent answers to questions on subjects met with in the passage. The rest were very backward, as might be expected. Reading.
They wrote on slates with varied success the first seven lines of "Anecdotes of a Voyage Round the World," dictated to them from Supplement to Fourth Book, and could transcribe a little. Writing.
They had begun simple addition and subtraction. Arithmetic.

Grown Children's School.

Present at Examination.

——	Boys.	Girls.	——
1st Class - -	2	9	Of these 20 girls and eight boys belong to the regiment, the others to the garrison staff.
2nd Class - -	7	7	
3rd Class - -	6	11	
Total - -	15	27	

The Protestant children were collectively catechised in the History of Joseph and of the Birth of Jesus Christ. The elder children answered fairly, but the younger ones evinced lamentable ignorance of the subject. Scripture.

1st Class.

"The Bustling Way and the Quiet Way" in the Supplement to Reading Book A. 4 was read well by all; some possessed an intelligent comprehension of what they had read. The spelling was good. The meaning of the words was generally understood. Reading.
Of this subject little was known, but one girl could give fair answers to my simple questions. They failed in the definitions of parts of speech. Grammar.
The elder children showed a satisfactory acquaintance with the geography of Europe. Geography.
Examples in long division were very creditably worked; one girl was well up in vulgar fractions also. Arithmetic.
In most instances good; of the three eldest girls excellent. Writing.

App. II. No. 14. Dictation. History.

The first five lines of "The Bustling Way and the Quiet Way" were written from dictation; four children made ten mistakes in spelling. The rest made no mistake at all.

Six children answered very intelligently; the rest showed but little acquaintance with the lesson.

2nd Class.

Reading.

These children read from page 77, Sequel No. 2 to third Book of Lessons creditably; spelt fairly, and understood the meaning of most of the words in the lesson.

Writing.

Was good; they wrote a little from dictation fairly, except in a few bad cases.

INFANT SCHOOL.

Schoolmistress - - - - Julia Maymon.
Monitress - - - - M. M'Dermott.

—	Boys.	Girls.	—
1st Class - - -	6	7	Of these only 23 belong to the corps.
2nd Class - -	2	6	
3rd Class - -	5	2	
4th Class - -	9	8	
Total - -	22	23	

The 1st class read at page 6 of "Early Lessons" very poorly. They could work easy sums in simple subtraction, and knew their multiplication table as far as 6. In grammar they could name the parts of speech pretty correctly; they wrote creditably some easy words dictated to them. They repeated some hymns correctly, and some read the clock-face tolerably well.

Of the 2nd class half could read the easiest words on their cards; they spelt fairly. They learn their multiplication table, but none could tell me how much three times three or four times three are; they could write on slates a little.

The 3rd class was learning in Macleod's Reading Lesson No. 22. The lower half of the class could read very few of the words.

The 4th class was learning the alphabet.

This school was collectively examined in Bible History, of which some of the infants were very ignorant.

The infants sang well. There was no ball-frame in this school, which is to be regretted. A box of objects was available, but the schoolmistress had given no object lessons, thus an easy method for developing the children's general knowledge of things that ought to be known remains untried.

INDUSTRIAL SCHOOL.

Some of the younger boys, as well as the girls, can sew. A number of girls' petticoats, dresses, samplers, and boys' coats, the work of this class, were exhibited; they were sewn in a most creditable manner.

Special class.

There is no special class.

Educational certificates.

At the inspection under report 26 men were examined for certificates. I was able to recommend one sergeant (Charles Clarke, who passed most creditably) for a first-class certificate, and eight privates for third-class.

In addition to these one gunner and six privates qualified for second-class in all the required subjects but mess book, ledger, and regimental savings bank accounts, in which they received no instructions whatever. I felt it my duty, knowing how much importance the Council attach to this portion of a soldier's acquirements to request the commanding officer to withhold the certificates until these men should acquire a sufficient acquaintance with those subjects.

Attendance.

All non-commissioned officers and men of the 45th Regiment under five years' service are required to attend school when off duty until they obtain certificates. No private is promoted to lance corporal until he can obtain a second-class certificate, or corporal to sergeant until he has obtained a first-class certificate.

School-rooms.

The school-rooms are perhaps the best available buildings in Fort St. George, and are conveniently situated, but I found the heat very great on the days of my inspection.

On the schoolmaster, schoolmistress, and other assistants.

Schoolmaster Morrison joined this corps 16 months ago, having been preceded by a dissipated master, who is said to have neglected his duty. The regiment returned from field service in Abyssinia last May, where, of course there was no school. The officer temporarily in command expressed to me his entire satisfaction with Schoolmaster Morrison, who has done his best for the men, and deserves much credit for the way in which he has brought on the 1st Class of grown children. The soldier assistants seemed to be intelligent men, and capable of imparting instruction. Schoolmistress Maymon bears a good character, and is attentive to her duties.

Library, recreation, and reading rooms of 45th regiment.

The library consisted of 1,043 vols. belonging to the corps, and 945 received from the late Garrison Library. The regimental books especially were exceedingly well selected. This corps is fortunate in having such a spacious and well-ventilated reading-room. Two Indian and 15 English newspapers, and the usual periodicals are taken in. There were 427 subscribers, exclusive of 24 officers. There is also a large recreation room, in which were two billiard tables, two chess boards, four backgammon boards, one set of dominoes, and two other games. Everything was in excellent order and very clean. I understood that in consequence of the men of this regiment not being compelled to appear in these rooms in uniform they attend in great numbers. Refreshments are procurable in the lower rooms. An officer is specially nominated to attend to the interests of these rooms, and another officer to those of the schools.

Artillery Library.

The battery arrived from Rangoon last May. The library consisted of 312 vols. received from the late Garrison Library. These books were placed in rows three deep on the shelves of a box, the back rows hidden from sight by the front row. The books are not likely to attract many soldiers to read them, consisting as they do almost entirely of historical, biographical, and scientific works and travels. I understood that very few of them are read. The number of subscribers was 52. For the recreation, library, and reading room a part of the bomb-proof ramparts is matted off, and all the light and air it receives is admitted through two low portals. The place is excessively hot, ill ventilated, and dark by day; and by night, I was told, the lights allowed were found to be insufficient for the requirements of the few men who used the room. There were no games and no refreshments. Two Indian newspapers were taken in and several English papers were supplied through the kindness of the officer commanding this battery.

H. L. Grove, Major,
Superintendent and Assistant Inspector of
Army Schools, Madras Presidency.

App. II.
No. 15.

Appendix II.—No. 15

Report by Major Grove for 1869.

To the Secretary to the Council of Military Education,
13, Great George Street, S.W., London.

Sir, Bangalore, 3d May 1869.

I have the honour to forward for submission to the Council of Military Education my annual general report on the army schools in the Madras command, for the official year 1868–69.

2. Prior to my assumption of office on the 24th August last, the schools of the Royal Artillery and 16th Lancers at Bangalore, and of the depôt at Wellington, were inspected by my predecessor, Colonel Laurie. Since then the schools of every depôt, regiment, and battery in this command, with the exception of those in Burmah and of H. M. 2/24th and 90th Regiments (then on the line of march), have been visited by me, the annual inspection as per margin made, and the reports thereof forwarded to the Council of Military Education immediately afterwards. The distances travelled by me amount to 1,100 miles by sea, and 4,200 by rail and road.

European Veterans, Palaveram, Depôt at Pooramallee.
European Veteran Company, Vizagapatam.
Royal Artillery, Saint Thomas Mount.
2/19th Regiment of Foot, Bangalore.
3/60th Rifles, Bellary.
Royal Artillery, Bellary.
Royal Artillery, Trichinopoly.
Royal Artillery, Cannanore.
1st Royal Regiment, Cannanore.
Royal Artillery, Kamptee.
H. M. 18th Hussars, Secunderabad.
2/10th Regiment of Foot, Secunderabad.
Royal Artillery, Secunderabad.
Royal Artillery, Trimulgherry.
H. M. 45th Regiment, Fort St. George.

3. It was intimated by my predecessor that, finding it impossible to make an annual inspection of all the army schools in this extensive command, he had resolved to visit Kamptee and Secunderabad one year, and Birmah the next, as is done by the Inspector General of Royal Artillery. However, as Secunderabad is the second largest European garrison in India, and as there are several large and important schools there (and no superintending schoolmaster), I shall make a point of going there every year; and propose, until the railway communication between Bombay and Madras is completed, visiting Kamptee and Birmah on alternate years.

4. On commencing the duties of this office, I found that the schoolmasters' half-yearly reports, D. Form, were sent in by only three or four corps; that from several schools even the monthly report, W.O. Form, 367, was not received; and that examination books were unknown, notwithstanding that sanction for their issue had been granted some time previously. Through good fortune Mr. Cartwright, the very able and zealous schoolmaster of H. M. 3d Battalion 60th Rifles, was able to furnish me with a copy of the book; it was soon printed at the Government Press; and now I am able to report that Form 367, Form D., and examination books are in use in every school in this army; but that it will take another year before all the schoolmasters, many of whom have not had the advantage of seeing these forms in use at home, have thoroughly mastered the details and comprehended the use of them. In several instances the monthly reports have been most incorrectly prepared. For the present, therefore, the reports (especially Form 367 and Form D.) sent to the Council from some schools should be accepted with caution. I am persuaded that the general use of these forms will induce more thorough and systematic teaching in every school. I avail myself of this opportunity to observe that there is nothing in Form 367 to indicate the number of times the schools for children are opened; which, since the schools for adults are opened in this country much less frequently than those for children and infants, seems to me to be an important omission. Until lately many of the masters were unacquainted with the several standards of attain-

Introduction of forms.

ment fixed by the Council, and had consequently taught their pupils only a part of the subjects of any one standard, and part of those appertaining to another standard. It has been by no means an unusual occurrence to find a pupil well up in vulgar and decimal fractions (A. standard), and entirely unacquainted with the mode of working practice and interest (B. standard). Inattention in this particular has made it incumbent on me on several occasions to recommend for a third-class certificate most intelligent men who, had they only been taught the standard subjects, would have been entitled to a second or first class certificate. I have found the omission to impart instruction in the mode of keeping savings bank and ledger accounts almost universal. (Mess accounts are used in this country.) This oversight has been repeatedly pointed out, and I confidently look forward to a very great improvement on this point throughout this army during the next 12 months.

Want of classification of pupils.

5. Sufficient attention has not been paid to classification according to attainments in reading and arithmetic. I do not remember one school in which those subjects are ordinarily taught in separate classes. The wishes of the Council in this point appear to have been entirely overlooked.

Want of standard reading books.

6. A serious difficulty under which the schools have hitherto laboured is the want of proper reading books, a want brought to notice by my predecessor, Colonel Laurie, but not yet supplied. I have reason to believe, however, that the introduction of these books has been sanctioned by Government, and that they will be supplied in the course of a few months.

Insufficient supply of books.

7. Another hindrance to the efficient working of our schools is the insufficiency, in quantity and variety, of books and materials; the allotment being inferior to that granted in the sister presidencies and in England. This disability, I am happy to say, is to be removed, and we are now to enjoy the advantages enjoyed in this respect elsewhere.

Hours of attendance at school insufficient.

8. My attention has been drawn to the very small number of hours during the day, and of days in the month, some of the schools, both for adults and grown children, have been opened. Whenever I have brought this to the notice of commanding officers my suggestions have been at once and most obligingly attended to. In England a half holiday is allowed on Saturdays only; but in this country it is not often that a school is open for more than four or five days in the week. In the appendix will be found a memorandum showing the average number of times per month the adult schools have been opened during the past year.

Want of school accommodation.

9. Insufficiency of accommodation or unsuitability of position is a very common and well-founded objection to the majority of the school-rooms in this presidency. I have reason to know that the opinions of general officers commanding divisions have been taken on this most difficult question, and that the matter is now under consideration. In due time, I doubt not, something will be done, some relief given. Sloping galleries are greatly needed, but until more commodious rooms are built, there are very few in which such galleries can be erected.

Misapprehension regarding the age at which infants may be admitted.

10. A misapprehension on the part of many schoolmistresses that because children of four years of age *must* be sent to school, therefore they cannot be admitted before that age is attained, has tended to keep the numbers in the schools below what they might have been; but since it has been intimated that children of even three years of age will be gladly received, many parents have most readily availed themselves of the permission to send them.

Conduct of schoolmasters and mistresses.

11. With one exception the conduct and abilities of schoolmasters have been favourably reported on by their commanding officers. I do not remember an instance of an unfavourable report on schoolmistresses.

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Some of the masters and mistresses are held in very high esteem, and most justly so, by the officers of the corps to which they are attached. I have been well satisfied with the exertion, zeal, and ability of the home and India trained masters and mistresses generally.

Status of India trained masters.

12. Some two years ago the advantages as to pay, pension, &c., of the school regulations of 1863 were offered to and accepted by most of the masters trained in India; but through some misunderstanding these men have, until quite recently, been unable to obtain the increase of pay to which they became entitled by accepting those terms, and the result has been considerable disappointment and discontent. However, within the last few months the claims of these men, as regards pay and position, appear to have become better understood, and I now look forward to increased zeal and diligence on their part.

Promotion of home-trained masters.

13. I beg to invite attention to the fact that not one of the home-trained masters in this command holds the rank of first class. It would afford me pleasure to hear of the promotion of schoolmasters Cartwright, Robinson, and Tapsell, who are all men of ability, tried character, and long service.

14. The abilities of a large proportion of the mistresses fall very short of what they should be. Many of the infant schools are taught by acting schoolmistresses, the wives of soldiers or non-commissioned officers, whose qualifications are on a par with their emoluments. The want of good mistresses is a most serious one, and under the peculiar circumstances of this country I do not see how it is to be met.

15. Object lessons, upon which I place a very high value, are seldom given, and in the majority of our schools never. The consequence is, that numbers of things which children might and ought to know our children are entirely ignorant of. A cabinet of objects is available in every school, but in almost every instance it might as well have not been there. I am very anxious to see object lessons more generally and systematically given, and shall continue to urge upon schoolmistresses the absolute necessity of making the little ones committed to their charge acquainted, in simple language, with the objects met with in daily life. Collective lessons also are not as frequently given to infants as they might be. There is too much breaking up of the school into classes, and too little of the infant school system of teaching practised.

Pupil teaching.

16. The system of having pupil teachers on graduated salaries to assist infant schools has not been introduced. The schoolmistresses are assisted by monitresses who, if belonging to a British regiment, draw 4*l.* a year, and if belonging to the (late Indian) Royal Artillery, or the European Veteran Company's school at Palaveram and Vizagapatam, 6*l.* These girls are usually very young and inefficient; ever ready to leave the moment they receive an offer of marriage, or come to the conclusion that the post is no longer worth their holding. I believe that many would try to improve themselves, and to pass such examination as the Council might be pleased to appoint, if only sufficient inducement to remain on were offered.

Assistant masters and soldier assistants.

17. Besides ordinary soldier assistants on rupees 6 a month, the Indian regulations admit of the employment of two assistant masters on rupees 10 each in corps exceeding 500 in number. The soldier assistantships are generally held by privates, and among these latter changes are very frequent. Many of these changes are the result of the idea prevalent among them that they are lost sight of, and run the risk of losing their promotion. Other changes occur through the misconduct of the assistants, or from their inability to remain on amicable terms with the master.

Educational certificates.

18. Until lately there were but few educational certificates in this army. Promotion was made irrespective of the possession of these

credentials; and many officers, especially those of the Royal Artillery, were unacquainted with their institution or object. But there has appeared within the last few months a marked change for the better in this respect, and a desire on the part of the men to obtain these marks of distinction and passports to promotion. Since last August I have had the pleasure of recommending 48 men for first-class certificates, 64 for second class, and 140 for third class. Many otherwise deserving men failed to obtain first or second class certificates through the failure of their masters to give promising men systematic and continuous instruction in that most important part of a soldier's education, viz. savings bank and ledger accounts. It has been my endeavour to impress on all concerned the necessity of giving more attention to these most useful subjects, a thorough acquaintance with which must secure the interest of company and battery officers in the education of their men.

Recent improvement in artillery schools.

19. My inspection reports will have shown how small and irregular the attendance of the artillery schools has been, and how mediocre the status of education. His Excellency Lieutenant-General McCleverty, the Commander-in-Chief, is aware of this, and has been pleased to issue a circular order, from which I make the following extract:—"In addition "to the general knowledge of his duties required of the non-commissioned "officer in the various ranks, you are to require that every man shall "produce a third-class certificate before promoting him to the rank of "bombardier, a second-class one before advancing him to sergeant, and "a first class for any rank or position above that of sergeant. * * Where "such certificates are not at present given the system must be in full "force by the 1st January 1870." The immediate result of this most admirable order has been a very large increase in the number of names on the school rolls.

Supply of Council reports.

20. In order that artillery officers may become acquainted with the wishes and views of the Council of Military Education, it is desirable that the officers marginally noted, and their schoolmasters, should be supplied with office copies of the Council's reports for 1866 and 1868. I conclude that copies are supplied to all the commanding officers and schoolmasters of British cavalry and infantry regiments serving in India.*

Officer commanding Royal Artillery, Saint Thomas Mount.
" " " Kamptee.
" " " Bellary.
" " " Cannanore.
" " " Bangalore.
" " " Secunderabad.
" " " Trichinopoly.
" " " Rangoon.
Also officers commanding Wellington and Poonamallee Depôts and European Veteran Company at Palaveram and Vizagapatam.

Irregularity of attendance in adult school.

21. Irregularity of attendance continues to exercise its usual baneful effect. In some regiments such men as attend voluntarily are required by their commanding officer to attend regularly until the end of the month, when, if they so desire, they are at liberty to withdraw their names. Thus regularity of voluntary attendance is secured, and I cannot but believe that if this rule were adopted and acted upon in its integrity in every corps, there would be a marked improvement in the attendance of volunteers; but it is in the non-commissioned ranks that the attendance is most unsatisfactory. I append a document showing the attendance in the adult school of a cavalry regiment for the last five months of the official year under report. Of the 18 sergeants on the school roll, 16 never entered the schoolroom during those months, and the attendances of the remaining two amounted to four. Again, of the 47 corporals, 16 absented themselves altogether, and the attendance of the rest amounted to 101; and this, too, in a school where the attendance was said to be compulsory! I admit, however, that this is an exceptional case, and that since the command has devolved upon another officer a great improvement in attendance has become apparent.

* *Note by Council.* Copies are supplied to the Deputy Adjutant-General, Royal Artillery, for distribution to the corps.

APP. II.
No. 15.
Compulsory attendance.

22. From compulsory attendance we cannot, it seems to me, expect to reap the full advantage for some years to come, when the only illiterate men left in the army will be recruits, who, when dismissed drill, should be required to attend school until they shall have obtained a third-class certificate. The exercise of great discrimination is at present necessary in forming an opinion as to what men shall be ordered to attend school. It must be borne in mind that in every regiment are to be found men of some years service who are doggedly determined not to learn; such will be generally found to be men who do not desire promotion. They would not have it on any consideration; nothing would induce them to accept the grade of corporal or sergeant. Such men have no ambition or desire for mental recreation; all they crave is to pass their time quietly and pleasantly. It affords me much pleasure to append a letter from the pen of second-class schoolmaster J. B. Tapsell, one of the ablest schoolmasters in this army, on the subject of irregularity of attendance, which, I venture to believe, will be found worthy of perusal. I believe it will be found that it is only such men as have been alluded to above who object to being ordered to attend school. I have been informed that numbers of men of one regiment in which compulsory attendance is required, rejoice at the order having been given, while they admit that shame would have kept them from attending voluntarily.

Attendance in grown children's and infants' school.

23. The attendance of the grown children and infants is, on the whole, as large and regular as can be expected. Towards the end of 1868 there was a considerable falling off in numbers at the army school of the European veterans quartered at Vizagapatam and Palaveram, consequent on the relaxation (so far as those two stations are concerned) of the order requiring Roman Catholics to send their children to school, under penalty of losing their subsistence allowance.

Industrial schools.

24. The attendance at the industrial schools is always good. The children there receive valuable instruction in needlework, which is of the greatest service to them all their lifetime. I should be glad to see all the boys in the infant schools taught to sew, hem, &c., but owing to the government of this presidency having sanctioned the capitation allowance for female scholars only, it is only here and there that boys are to be seen in an industrial school. I cannot but think that if one or two ladies of each regiment or battery would take a little interest in the industrial and girls' school, these institutions would become even more beneficial than they are.

Religious instruction.

25. The schools for grown and infant children are opened with prayer and reading of the Bible. The masters give the (Protestant) grown children a Bible lesson daily, except on those days on which the chaplain is expected. The chaplain's visit lasts one hour, and is paid regularly once a week, and in some instances twice. Some chaplains give directions to the schoolmasters as to the nature of the religious instruction to be given by them, others again leave this to the discretion of the master. Chaplains do not usually give religious instruction to the infants, as they consider them too young to benefit by the lesson given to the older children. At most stations there is a Sunday school to which the children go, and they are marched to divine worship on Sundays. With one or two exceptions the religious training of the children is attended to as well as can be expected in India.

Special classes and night school.

26. There are at present seven special classes and five night schools. Artillerymen seem to find it more convenient to attend school in the evenings than during the day. Some masters are not satisfied with the class of men attending the special classes, nor with their progress. It seems desirable that in selecting men for the special class, such only should be sent as are likely to make good non-commissioned officers; for I conclude that special classes are intended for such men as are promising and well-behaved, good drills, and smart in the performance of their

military duties, though deficient in education. In most cases the attendance of special classes is very regular, and this circumstance is of itself sufficient to augur well for the general success of the experiment. In some regiments the special classes are highly approved of and encouraged by the commanding officer, and are certain, under such circumstances, of exercising a most beneficial influence.

27. In two regiments the schoolmasters have introduced with considerable success the plan of lending slates, books, and pens to men who seem really anxious to improve themselves. I am assured that these men gladly avail themselves, as they have time and opportunity, of such assistance, and that marked progress has been made out of school hours.

28. The standard of education in the grown children's school may be said to be as a rule higher than that of adult schools. In some of the grown children's schools the education imparted is of a superior description, and boys trained in them readily find employment in the telegraph, survey, engineer, medical, and postal departments. Writing from dictation is invariably taught in every school for adults and grown children, but I should like to see English composition and punctuation also taught. Beyond two or three desultory efforts these subjects are not attempted.

Hindustani class.

29. To every British regiment and to the head quarters of an artillery brigade a moonshee is attached, whose services are available for the instruction of such men and boys as may be desirous of learning Hindustani. By this means a good many men have acquired a fair knowledge of this most useful language, and some have passed good examinations. Many of the schoolmasters have done the same. But still, considering what advantages are opened up to men who have a good colloquial acquaintance with Hindustani, it is surprising how few avail themselves of the opportunity thus afforded them of learning it. One chief cause of the students being so few is, I am persuaded, the want of the test books written in the Persian character. Hindustani books prepared in a romanized character have been supplied by Government; but as moonshees cannot read them, and the men desire to learn the language in the character in which the test examination has to be passed, those books remain unused, and the men provide themselves as best they can with the books they require.

Lectures and reading.

30. It is to be regretted that so few lectures have been delivered to this army during the past 12 months, notwithstanding the many appeals made to officers and schoolmasters to aid in this good cause. Schoolmaster M'Pherson forms a notable exception to this remark. He has given a large number of lectures. The efforts of Colonel Annesly, commanding H.M. 2d Battalion 10th Foot, Major Bulger, and some other officers who take the most earnest lively interest in everything that concerns the welfare and general improvement of their men, deserve to be brought to prominent notice. For several months past these officers, assisted by some of the non-commissioned officers and men, have given readings, varied with musical interludes, both vocal and instrumental. These entertainments are given as often as once or twice a week, and have proved, I understand, a source of great pleasure to large audiences, in short, a complete success, and conducive to a marked improvement in the general conduct of the regiment. With the view of aiding persons willing to give illustrated lectures a G.O.C.C. on the subject of magic lanterns has been recently published. A magic lantern has been supplied to each large military station, and arrangements have been made for the regular and systematic circulation of slides. A copy of the G.O.C.C. in question is annexed. Theatricals form a constant source of employment

Magic lantern.

App. II. No. 15.

and amusement to a large portion of the men and their families. Every regiment and brigade of artillery seems to be provided with a theatre.

31. A field officer who devotes his life to doing good among the men of his regiment writes to me thus:—"The more I see of soldiers the "more convinced I am that they require some strong counter-attraction "to keep them from dens of vice and infamy; and, so far as my expe- "rience has gone, nothing approaches so nearly to the purpose as com- "fortable and attractive reading rooms, with theatricals (not the usual "soldiers' theatres, got up and managed by soldiers, the great object of "which is to make money and drink it, but such as we have, managed "and entirely controlled by an officer whose object is the refinement and "elevation of the soldier) games, readings, &c. &c."

Library and recreation rooms.

32. Every regiment, brigade of artillery, and detached battery is provided with a library and recreation room. Those of the artillery are, I think, as a rule inferior in comfort and appearance to those of the other branches of the service. All these institutions in India are, I believe, in respect of comfort, &c., below those of England; but the hope may be indulged that as these institutions become self-supporting, which it is the wish of the commander-in-chief they should be, all improvements still wanting will be supplied from the regimental funds. Refreshments are available in many of the recreation rooms.

Want of masters.

33. The Council are doubtless aware that the masters attached to all our artillery schools (with one exception) and to several British regiments are men who have been trained in this country. As the training of this class of men has been discontinued their numbers are steadily diminishing, and the question that presents itself is, how are their places to be supplied? With two exceptions our assistant masters are merely picked soldier assistants who receive rupees 10 a month, and other assistants rupees 6. For the future all vacancies among the masters will have to be filled up with men sent from home.

Examinations.

34. In conclusion, I have to remark that the arrangements made for the examination by the schoolmaster are not satisfactory; in point of fact in many cases no arrangements at all seem to be made. The men on the school roll drop in as it suits their own convenience, thus most unnecessarily protracting the schoolmaster's work, and obstructing the regular business of the school. In one school the examination prior to my annual inspection was going on for five weeks.

I have, &c.

H. L. Grove, Major,
Superintendent of Army Schools,
Madras, India.

App. II. No. 15.

TABLE showing the NUMBER of SCHOOL CERTIFICATES of the several CLASSES obtained in different REGIMENTS between April 1868 and March 1869, in the Madras Presidency.

Regiments.	Class.			Total No. of Certificates.	Names of Schoolmasters.
	1st.	2nd.	3rd.		
1st Battalion, 1st Royals -	18	11	16	45	Shannon.
2nd „ 10th Foot -	7	15	25	47	Robinson.
2nd „ 19th „ -	7	1	24	32	Flood.
1st „ 45th „ -	1	6	14	21	Morrison.
Do. (at Wellington Depôt)	1	1	2	4	Tapsell.
3rd Battalion, 60th Rifles -	4	3	—	7	Cartwright.
1st „ 76th Foot -	3	9	8	20	Comerford.
18th Hussars - - -	1	7	18	26	McPherson.
C. Battery, 23d Brigade, R.A., Trichinopoly -	—	—	7	7	Scully.
R.A., Bellary - - -	—	—	11	11	Haynes.
„ Trimulgherry - -	2	8	8	18	Green.
„ Kamptee - - -	2	—	5	7	Rees.
„ Cannanore - -	—	2	2	4	Brannagan.
„ Fort St. George -	—	1	—	1	Morrison.
„ Bangalore - -	2*	—	—	2	Gibb.
Total - - -	48	64	140	252	

* Granted by my predecessor.

TABLE showing NUMBER of CERTIFICATES in the several CLASSES obtained by different RANKS.

Class of Certificate.	Non-commissioned Officers.	Privates, Gunners and Drivers.	Trumpeters and Drummers.
1st - - -	32	10	2
2d - - -	57	33	1
3d - - -	65	50	2
Total - -	154	93	5
Grand Total -	252		

Of the above, 216 received certificates at my periodical inspection, 4 at a special examination, and 32 on examination conducted under the superintendence of a committee appointed by the commanding officer.

App. II. No. 15.

TABLE showing AVERAGE NUMBER of TIMES per MONTH ordinary CLASSES for ADULTS were opened during the past YEAR, and AVERAGE NUMBER of ATTENDANCES per MAN per MONTH.

	No. of Times School was open.	No. of Attendance.	Duration of Lesson.
1st Battalion, 1st Royal Regiment -	18	2·1*	1½ hour.
2nd „ 10th Regiment - -	17·75	6·9*	1½ „
2nd „ 19th „ - -	15·4	5·8*	1½ „
2nd „ 21st „ - -	17·5	4·6*	1¼ „
1st „ 45th „ - -	20	5	1½ „
3rd „ 60th Rifles - - -	12·5	4·8*	1½ „
1st „ 76th Regiment - -	15	2·4*	2 „
16th Lancers - - - - -	13	2	1 „
18th Hussars - - - - -	18	8·3	1¼ „
Depôt at Wellington - - - -	16	3	1½ „
Royal Artillery at Trichinopoly - -	21·5	2·3	1½ „
„ Trimulgherry -	17	5·5	1½ „
„ St. Thomas Mount	8	2·5*	1½ „
„ Cannanore - -	20	7·6	1½ „
„ Kamptee - -	11	3·2*	1¾ „
„ Bellary - - -	14	5·4	2 „
„ Secunderabad -	10·5	2·3	1½ „
„ Bangalore - -	16	4·14	1½ „

* Exclusive of attendance of special class.

STATEMENT of LECTURES given during the past YEAR ending 31st March 1869.

Regiment.	Name of Lecturer.	Subject of Lecture.
2nd Battalion 10th Foot	Major Bulger & others	30 evenings of Readings.
3rd Battalion 60th Rifles	Major Brooke -	Recollections of China.
	Do. - -	Do. do.
	Schoolmaster Cartwright.	Wild Sports of N. America.
		New Zealand. Reading from Dickens' works.
16th Lancers - -	Schoolmaster Davidson	On Magic Lantern.
18th Hussars - -	„ McPherson	Shores of the Mediterranean.
		Days of George III.
		Do. do.
		A trip to Pekin.
		The Horse.
		The Ocean.
		The Pyrenees.
		Asiatic Archipelago.
		Peninsular War.
		The Commonwealth.
		European Capital.
		Days.
		Wellington in India.
		Animal Physiology.
		Deserted Cities.
		Plateaux of Asia.
		British Colonies.
		The Eclipse.
		The Hundred Days.
		Lord Clive.
		Do.
		Overland Route.
Royal Art., Kamptee -	Maj. Napier Campbell	Reading from Dickens.

Relative Standards of Attainments ascertained at Annual Inspection.

Regiments.	Reading.				Dictation.				Arithmetic.				
	A.	B.	C.	D.	A.	B.	C.	D.	A.	B.	C.	D.	E.
1st Battalion, the Royal Regiment - -	39·3	22·2	16·1	10·1	20·2	15	20·2	18·1	19·1	9·1	31·3	16·1	7·1
2nd „ 10th Foot - - -	20	20·6	10·3	14·4	4·8	18·6	13·1	19·2	6·2	17·2	13·7	6·2	11·4
2nd „ 19th Foot - - -	19·9	34·5	12·0	5·1	11·2	12·0	23·3	19·9	„	13·8	14·6	16·4	23·3
Right wing, 3/60th Rifles - - -	75	15·9	2·2	6·8	31·8	13·2	17·6	22	8·8	33	28·6	11	8·8
Left wing, 3/60th Rifles - - -	31·4	17·1	20	5·7	25·7	28·5	8·5	20	17·1	42·8	22·8	5·7	„
18th Hussars - - - -	13·75	18·75	37·5	13·75	13·75	15	21·25	18·75	2·5	3·7	33·75	3·7	22·5
Royal Artillery, Trimulgherry - -	44·4	25·9	18·5	„	37·5	33·3	11·1	11·1	7·4	33·3	37·1	„	22·2
„ „ Secunderabad - -	16	33·2	„	16·6	„	16·6	33·2	„	„	„	„	5	„
„ „ Kamptee - - -	6·2	31·2	6·2	3·1	3·1	12·4	18·7	9·4	„	6·2	24·8	„	3·1
„ „ Cannanore - - -	50	50	„	„	20	20	30	20	„	10	20	„	40
„ „ Trichinopoly - -	42·9	23·8	9·5	9·5	9·5	9·5	4·7	33·3	„	„	33·3	14·3	9·5

In dictation the books of lessons prescribed in D. Form were used by me.

APP. II. No. 15.

SIR, Wellington, April 6, 1869.

I SEE, by the English papers which arrived by the last mail, that the Council of Military Education has published its fifth report on army schools, &c., and that irregularity of adult attendance is still matter for serious consideration.

The following extracts from various reports on army schools will show how long the attention of those who have had the supervision of education in the army has been fixed on this subject, and how anxiously, but as yet fruitlessly, they have sought its remedy.

"Irregularity of attendance is the greatest difficulty with which the schoolmaster has to contend." (Col. Lefroy's Report of 1859.)

"We have given our most anxious attention to this question, as on "its possible solution depends the efficiency of the present army school "system." (Second Report of Council.)

Mr. Vicars says (Art. VII., 3 Report), "The irregularity of attendance so long complained of has by no means abated;" and Mr. Sargeaunt complains of "irregularity of attendance as the greatest impediment to progress in adult schools."

"No improvement is visible in respect to regularity of attendance." (Council's 4th Report, p. 11.)

"The remedy for this irregularity of attendance continues to be anxiously sought for by the Council." (4th Report, p. 14.)

I trust, sir, the urgency of the case, as shown by the above extracts, together with the fact that the subject is one over which, since my entry into the service, I have seriously and anxiously pondered, may prove some excuse for my temerity in asking you to be so indulgent as to read patiently what I have written, and should you see in it the probable solution of the difficulty, to be so good as to submit my letter to the Council.

I beg to inform you that the plan I now propose I have had by me in manuscript over two years; that I have shown it to numbers of officers, non-commissioned officers, and privates, and have endeavoured to obtain their unbiassed opinion of it; and while all have approved of it, many intelligent non-commissioned officers have told me that they considered it would not only put a stop to the irregularity of attendance so much complained of, but would tend to bring the army school system into greater favour with the bulk of the army than it is in at present.

The cause of this irregularity of attendance is no doubt infirmity of purpose on the part of the men. Thousands of young men in the army desire to advance themselves, and as a means to that end enter their names on the school books, but proving unequal to the continued exertion necessary to improvement, and at the same time not liking to relinquish all hopes of advancement, they continue month after month, even year after year, to put in a precarious attendance in the schoolroom without benefit to themselves or to the service. To counteract this infirmity of purpose is to solve the question of irregularity of attendance.

Hitherto, especially in the United Kingdom, soldiers have been coaxed to attend school by excusing those who attended from parades, fatigues, &c. This course has failed; and were it not that I wish to keep this letter within bounds, I could adduce numberless facts to show that it never was in favour with men earnest in their endeavours to improve themselves, while it was taken advantage of by numbers of idlers to shirk fatigues, &c., and thus to impose additional duty on their more honest comrades.

This coaxing system having proved a failure, some persons now advocate that attendance at school should be made compulsory on the part of the soldier. Not to mention that the legality of this course is still a moot point, the course itself would not provide the remedy required;

the schoolroom would no doubt be crowded, indeed overcrowded, with scholars, but many would be so indisposed to learn that their attendance would soon become matter for regret, as they would monopolize much of the schoolmaster's time which he could more profitably employ in attending to scholars eager to get on.

By steering a middle course between the coaxing and compulsory systems, regularity of attendance, with its end and object, viz., the ultimate improvement and increased usefulness of the soldier, will, I beg to submit, be obtained; and to obtain this object the plan I propose is as follows:—

Three months after dismissal from drill each man should be asked by the captain of his company if he intends to become a candidate for promotion. If his answer be in the affirmative his name should at once be entered on the school books, and his attendance be compulsory until he obtains a third-class certificate, which would qualify him for promotion to corporal. After taking out this certificate his attendance at school should be optional until he attains the rank of corporal, when, if he intends to go in for further promotion, his attendance should be compulsory until he obtains a second-class certificate, which would qualify him for promotion to sergeant, when his attendance should again become optional until he attains the rank of sergeant, when his attendance will again become compulsory if he becomes a candidate for colors, and continue so until he obtains a first-class certificate, which will qualify him for promotion to color-sergeant.

It should be clearly understood that no one can obtain promotion unless he be in possession of the qualifying certificate.

Attendance should be purely optional with those men not candidates for promotion, and should a young soldier succeed in obtaining a first-class certificate he should be exempt from school during the entire period of his service; or should he obtain a second-class certificate, he should be exempt until he attains the rank of sergeant.

The above plan, I think, is so far compulsory as to overcome the infirmity of purpose on the part of the men, and to such an extent optional as will prevent them from feeling they are treated as children. It is also I conceive fraught with advantages neither few nor insignificant, besides that of correcting the evil so much complained of. The names on the school books would indicate the number of men seeking promotion in the whole army; steady progress would continue to be made in the privates' school; non-commissioned officers would be more easily obtained and more efficient than at present; examinations by regimental authorities and special classes would cease to be necessary; certificates would be more eagerly sought after, and more highly prized when obtained; but the greatest benefit of all would be, that the regimental school would become day by day a source of less anxiety to those engaged in its management and supervision, and at the same time more and more acceptable to those who have to be instructed in it, till it would ere long become an honoured and truly useful institution.

Of course it is quite possible I may overrate the benefits likely to accrue from the adoption of this plan; but as the army school system is not in so satisfactory a state as the Council desire it should be, I should consider myself indeed fortunate if what I have written were to conduce, in however slight a degree, towards the application of the remedy so anxiously sought for by the Council.

I am, &c.

To Major Grove, Superintendent of Army Schools.

J. B. Tapsell,
Second-class Schoolmaster

App. II.

No. 15.

G.O.C.C., dated 30th October 1868.

Schools:—Magic Lanterns.

No. 140.—Referring to Horse Guards General Order, No. 796, of 26th September 1861, on the subject of magic lanterns and the delivery of lectures to the troops, it is notified that the magic lanterns in use in this presidency for army schools are to be distributed as follows:—

1	to the officer commanding		centre division.
1	„	„	Pegu division.
1	„	„	Mysore.
1	„	„	Malabar and Canara.
1	„	„	Ceded districts.
1	„	„	Hyderabad subsidiary force.
1	„	„	Nagpoor force.

I. The senior trained schoolmaster at each of the under-mentioned stations to have charge of the magic-lantern slides, &c.

II. The magic lanterns should be kept at the head-quarters of the division to which they have been sent, but the slides should be circulated and forwarded from each station mentioned in the margin to the next in order, in the first week of January, May, and September of each year, commencing from May next. One month prior to the despatch of the slides, the schoolmasters will on each occasion prepare and forward a detailed descriptive list of them to the senior schoolmaster of the next station, who will send copies of that list to the schoolmasters of the several regiments and batteries entitled to use the lantern.

Fort St. George.
Bangalore.
Cannanore.
Kamptee.
Secunderabad.
Bellary.
Rangoon.

III. In the event of the magic lantern being required for any other corps in the station to illustrate lectures, the requisition of it should be countersigned by the officer in command of the station.

IV. The apparatus at Fort St. George will be available for Palaveram and St. Thomas Mount; that at Bangalore for Trichinopoly; and that at Rangoon for Theyetmyoo and Tonghoo. In such cases requisition must be made twice in each year; but it is to be understood that there must be no unnecessary delay in returning the apparatus to the station to which it belongs.

Best sperm oil.
Wicks.
Tin oil filler.
Chimney glasses.
Chamois leather.
Camphor.
Spirits of wine.
Black oxide of manganese.
Chlorate of potash.
Limeball cylinders.
Metal rods for sheet.
Pairs of scissors.
Brown paper for packing.
Twine for packing.
Sheet or screen when required.

V. The Horse Guards order under reference will be the guide in the employment of these lanterns. The articles noted in the margin, referred to in the 13th paragraph, are, with the sanction of Government, to be obtained by indent on the Commissariat Department. The indenting officer sending his indent in the first instance to the Superintendent of Army Schools, who will, on examination, forward it for the countersignature of an officer of the Adjutant-General's Department at the Presidency, by whom it will be forwarded to the department of supply. The strictest economy is enjoined in the expenditure of the articles received on indent.

VI. The following payments should be defrayed out of the canteen fund of the regiment using the magic lantern.

(1.) The carriage of the boxes of circulating magic lanterns.
(2.) Postage of letters on subjects of their circulation.
(3.) Washing of cloth screen or sheet, and cooly hire.

VII. The slides, when carefully packed for transmission, are to be handed over to the Commissariat Department for despatch, addressed to "the officer commanding regiment."

(A true copy.)

H. L. Grove, Major,
Superintendent Army Schools.

APP. II.
No. 15.

16th QUEEN'S LANCERS.

ABSTRACT of Adult Register, Army School, from November 1868 to March 1869.

Rank and Names.		No. of Attendances in November.	December.	February.	March.	Total.	Remarks.
No. of Times School opened for Adults.		13	8	12	14	47	School closed during the whole of January.
Serjeant	Lee	—	—	—	—	—	
,,	Meldrum	—	—	—	—	—	Dismissed; 31st March.
,,	Rackham	—	—	—	—	—	Do.
,,	Caldecourt	—	—	—	—	—	Do.
,,	Harvey	—	—	—	—	—	
,,	Mootham	—	—	—	—	—	
,,	Minnie	—	—	—	—	—	Dismissed; 31st March.
,,	Lee	—	—	—	—	—	
,,	Wilson	—	—	—	—	—	
,,	Winning	—	—	—	—	—	Discharged by purchase.
,,	Love	—	—	—	—	—	To Corporal. Dismissed.
,,	Lawrence	—	—	—	—	—	Dismissed; 31st March.
,,	Waring	—	—	—	—	—	Do.
,,	Lambert	—	—	—	—	—	Do.
,,	Hingle	—	—	—	—	—	Do.
,,	Barnett	—	—	—	—	—	Do.
,,	Harris	1	—	—	—	1	To Corporal.
,,	Higgs	1	2	—	—	3	
Corporal	Madin	—	—	—	—	—	
,,	Stewart	4	—	—	3	7	
,,	Mattison	6	4	2	—	12	
,,	Mather	—	—	—	—	—	
,,	Sholl	—	—	—	—	—	
,,	Chapman	2	—	3	—	5	
,,	Mason	—	—	2	—	2	
,,	Redford	—	—	—	—	—	
,,	Vickers	—	—	—	—	—	
,,	Wynn	—	—	—	—	—	Reduced; December.
,,	Bell	3	1	1	—	5	
,,	Smith	—	—	1	—	1	
,,	Crofts	—	1	—	—	1	
,,	Gibbs	—	—	—	1	1	
,,	Gledhill	5	1	1	—	7	Dismissed; 31st March.
,,	Hopper	1	—	—	—	1	
,,	Munro	2	—	—	—	2	
,,	Jackson	—	—	—	—	—	
,,	Day	5	—	—	—	5	
,,	Hannan	—	—	—	—	—	Reduced; December.
,,	Heywood	—	1	—	—	1	
,,	Robinson	1	—	—	—	1	
,,	Smallpage	5	—	—	—	5	
,,	Deare	—	—	—	—	—	Invalided; February.
,,	Boland	2	—	—	—	2	
,,	O'Dell	—	1	—	—	1	Reduced; February.
,,	Rhynart	—	—	—	—	—	
,,	Harvey	—	—	1	—	1	
,,	Kaycole	4	—	—	—	4	
,,	Tow	5	3	—	1	9	
,,	Waddell	2	—	—	—	2	
,,	Gurney	3	1	—	—	4	
,,	Warr	—	—	—	—	—	
,,	Ward	—	—	—	—	—	Dismissed; 31st March.
,,	Culvenor	—	—	—	—	—	Invalided; February.
,,	Watson	—	—	—	—	—	Dismissed; 31st March.
,,	Aldrich	2	—	—	—	2	
,,	Ridgway	1	1	1	—	3	
,,	Gibbins	—	—	1	—	1	
,,	Edwards	1	3	—	—	4	Reduced; February.
,,	Mansfield	1	—	1	—	2	
,,	Doherty	4	—	—	—	4	Dismissed; 31st March.
,,	Smith	—	—	1	—	1	Joined; 8th February.

App. II. No. 15.

Abstract of Adult Register, &c.—*continued.*

Rank and Names.		No. of Attendances in November.	December.	February.	March.	Total.	Remarks.
No. of Times School opned for Adults.		13	8	12	14	47	School closed during the whole of January.
Corporal	Waters	—	—	3	—	3	Joined; 8th February.
	Garrett	—	—	—	—	—	Dismissed; 31st March.
	Hossick	—	—	—	—	—	
„	Swetnam	—	—	—	—	—	Do.
Private	Whiting	3	3	—	—	6	Attends voluntarily.
„	Brown	4	—	—	1	5	Do.
„	Mattick	4	—	—	2	6	Do.
„	Forkgen	—	3	9	2	14	Joined; 14th December; recruit.
„	Forster	—	—	7	6	13	Attends voluntarily.
„	Gleeson	—	—	2	—	2	Do.
„	Glover	—	—	3	—	3	Do.
„	Daily	—	—	3	—	3	Do.
„	Fox	—	—	1	5	6	Do.
„	Dyer	—	—	1	4	5	Do.
Trumpeter	Pope	1	—	—	—	1	Dismissed; February.
„	Bosworth	4	1	2	5	12	
„	Dolan	4	—	—	—	4	Do.
„	Walsh	3	1	1	—	5	
„	Brown	3	2	—	—	5	Do.
„	Flaggan	1	1	—	—	2	Do.
„	Grant	2	1	1	—	4	Do.
„	Marsh	—	2	10	6	18	Joined; 14th December.
16th Lancers' attendances		90	33	58	36	217	
A/1½ R.A. do.		96	70	91	203	460	
Total: *vide* Monthly Reports.		186	103	149	239	677	

Abstract of the Attendance.

No. of times the adult school was opened: November to March	47
No. of men who did not attend once	33
No. who did not exceed 5 attendances	39
No. who exceeded 5 but not 10	6
„ 10 „ 15	4
„ 15	1
Total No. of men accounted for	83

Jno. Davidson.

Appendix III.—No. 1.

App. III. No. 1.

Table showing the Average Number of Non-commissioned Officers, Privates, &c., whose Names were on the School Books, with the Average Daily Attendance for the Year 1868.

Regiment.	Station.	On School Books.			Number of Attendances during the Year.	Average Number of Lessons per Man during the Year.	Remarks.
		Non-commissioned Officers.	Trumpeters, and Drummers.	Total.			
1st Life Guards	London	1	33	34	4,482	132	
2nd „ „	Windsor	7	35	42	4,806	114	
R. H. Guards	London	5	26	31	2,391	80	
1st Dragoon Guards	Sheffield	20	54	74	5,990	81	
2nd „ „	Mhow	25	77	102	6,735	66	Det.
3rd „ „	Winchester, &c.	25	15	40	2,297	57	
4th „ „	Aldershot	16	27	43	2,484	58	
5th „ „	Aldershot	29	86	115	3,907	34	
6th „ „	Longford	21	72	93	10,955	118	
7th „ „	Shorncliffe	1	120	121	13,706	113	
1st Dragoons	Longford and Dublin	9	26	35	1,673	48	
2nd „	Dundalk and Cahir	26	22	48	3,981	87	
3rd Hussars	Hounslow and Chichester.	35	65	100	7,884	79	Det.
4th „	Meerut	32	76	108	6,876	64	
5th Lancers	Lucknow	12	146	158	6,210	39	
6th Dragoons	Manchester	1	29	30	2,149	72	
7th Hussars	Sealkote	12	70	82	4,297	53	Det.
8th „	Manchester and Edinburgh.	5	16	21	2,818	134	
9th Lancers	Cahir and Newbridge	18	49	67	3,984	59	
10th Hussars	Aldershot and Newbridge.	12	151	163	3,660	22	
11th „	Muttra	38	33	71	3,592	51	
12th Lancers	Dublin and Dundalk	60	48	108	3,764	35	
13th Hussars	Toronto	41	6	47	2,410	51	
14th „	Edinburgh and Newbridge.	26	100	126	9,126	72	Det.
15th „	York	1	53	54	6,908	129	
16th Lancers	Bangalore	62	48	110	2,769	25	
17th „	Brighton and Hounslow.	15	35	50	4,246	85	
18th Hussars	Secunderabad	44	65	109	9,872	91	
19th „	Benares	26	25	51	3,207	64	
20th „	Campbellpore	31	157	188	10,449	56	
21st „	Umballa	3	28	31	3,816	94	
Military Train	Aldershot	43	64	107	8,956	84	
„ „	Woolwich	28	82	110	7,115	65	
Cavalry Depôt	Canterbury	15	108	123	15,091	123	
		745	2,047	2,792	192,606	—	
1st Bat. Gren. Guards	London and Windsor	39	257	296	16,868	57	
2nd „ „	London	30	246	276	13,063	47	
3rd „ „	Dublin	36	167	203	16,466	81	
1st Bat. Cold. Guards	Windsor and London	66	127	193	5,899	31	
2nd „ „	London	51	160	211	10,726	51	
1st Bat. S. Fus. Guards	London	23	171	194	13,193	68	
2nd „ „	London	30	184	214	14,241	67	
Depôt	Warley	17	234	251	36,090	144	
		292	1,546	1,838	126,551	—	

APP. III.
No. 1.

Regiment.	Station.	On School Books.			Number of Attendances during the Year.	Average Number of Lessons per Man during the Year.	Remarks.
		Non-commissioned Officers.	Privates, Trumpeters, and Drummers.	Total.			
1st Bat. 1st Foot	Cannanore	27	152	179	3,757	21	
2nd „	Nusseerabad	51	79	130	6,270	48	
1/2nd „	Aden and Poona	20	137	157	1,917	12	
2/2nd „	Athlone and Aldershot.	82	132	214	5,827	27	
1/3rd „	Meerut	42	76	118	9,957	84	
2/3rd „	Bristol	22	53	75	5,696	76	
1/4th „	Dover	1	79	80	1,665	21	
2/4th „	Halifax, N. S. and Dublin.	32	42	74	1,846	25	
1/5th „	Ferozepore	33	101	134	7,738	58	
2/5th „	Dover and Aldershot	31	137	168	12,911	77	
1/6th „	Rawul Pindee	2	119	121	9,871	82	
2/6th „	Edinburgh and Aldershot.	36	254	290	15,915	55	
1/7th „	Saugor	28	16	44	1,979	45	Det.
2/7th „	Bury (Lancaster)	16	144	160	16,478	103	Det.
1/8th „	Malta and Poona	58	179	237	9,383	40	
2/8th „	Aldershot	2	84	86	9,306	108	
1/9th „	King Williams Town	14	182	196	5,784	30	Det.
2/9th „	Japan and Dublin	40	62	102	4,998	49	
1/10th „	Japan	36	152	188	4,204	23	
2/10th „	Secunderabad	83	237	320	23,634	74	
1/11th „	Fyzabad	37	80	117	5,808	50	
2/11th „	Grahamstown	41	119	160	4,692	29	Det.
1/12th „	Devonport	29	69	98	4,268	44	
2/12th „	Jubbulpore	70	115	185	4,838	26	Det.
1/13th „	Gibraltar	42	54	96	6,600	69	
2/13th „	Portland and Gosport	20	111	131	11,557	88	
1/14th „	Malta and Cawnpore	56	174	230	9,441	41	Det.
2/14th „	Melbourne	13	85	98	2,262	23	Det.
1/15th „	Bermuda	76	12	88	2,893	33	
2/15th „	Gibraltar	45	73	118	4,540	38	
1/16th „	Montreal and Halifax	48	232	280	3,878	14	
2/16th „	Barbadoes	61	278	339	25,495	75	Det.
1/17th „	Curragh and Newry	36	157	193	11,072	57	Det.
2/17th „	Toronto, Dublin, &c.	14	64	78	5,461	70	
1/18th „	Edinburgh and Curragh.	48	150	198	13,988	71	
2/18th „	Auckland	8	28	36	1,729	48	
1/19th „	Rawul Pindee	33	153	186	4,450	24	
2/19th „	Bangalore	45	176	221	11,210	50	
1/20th „	Devonport and Aldershot.	9	183	192	12,141	63	
2/20th „	Natal	40	134	174	9,502	55	Det.
1/21st „	Enniskillen and Curragh.	67	75	142	3,466	24	Det.
2/21st „	Secunderabad	50	41	91	4,310	47	
1/22nd „	New Brunswick	32	70	102	6,557	64	
2/22nd „	Newcastle-on-Tyne	24	78	102	2,916	29	Det.
1/23rd „	Bombay	39	188	227	10,512	46	
2/23rd „	Newport (Monmouth)	35	111	146	7,648	52	
1/24th „	Malta	35	97	132	7,003	53	
2/24th „	Rangoon	56	—	56	2,134	38	
1/25th „	Glasgow and Aldershot.	33	111	144	6,450	45	
2/25th „	Shahjehanpore	2	89	91	2,742	30	
26th „	Dum, Dum, &c.	105	209	314	7,105	23	
27th „	Dover and Chatham	19	67	86	5,216	61	
28th „	Belfast and Gibraltar	29	154	183	9,664	53	
29th „	Toronto	63	67	130	8,899	68	
30th „	Quebec and Halifax	28	74	102	2,701	26	
31st „	Malta	55	124	179	4,061	23	
32nd „	Mauritius	20	61	81	6,427	79	
33rd „	Portsmouth	44	53	97	1,490	15	
34th „	Portsmouth and Aldershot.	17	119	136	8,514	63	

APP. III.
No. I.

Regiment.	Station.	On School Books.			Number of Attendances during the Year.	Average Number of Lessons per Man during the Year.	Remarks.
		Non-commissioned Officers.	Privates, Trumpeters, and Drummers.	Total.			
35th Bat. 1st foot -	Portsmouth - -	55	73	128	4,149	32	
36th „ -	Peshawur - -	36	108	144	5,966	41	
37th „ -	Bareilly - -	105	47	152	9,046	60	
38th „ -	Sealkote - -	38	68	106	8,992	85	
39th „ -	Kinsale and Fermoy	12	236	248	13,241	53	
40th „ -	Aldershot and Carlisle.	44	55	99	6,905	70	
41st „ -	Agra - - -	52	164	216	11,815	55	
42nd „ -	Stirling and Edinburgh.	19	86	105	8,322	79	
43rd „ -	Aldershot and Jersey	43	78	121	3,240	27	Det.
44th „ -	Kilkenny - -	55	194	249	10,392	42	Det.
45th „ -	Madras - -	10	176	186	5,184	28	
46th „ -	Parkhurst - -	47	74	121	6,506	54	
47th „ -	Halifax, N. S. -	33	206	239	5,746	24	
48th „ -	Fermoy and Malta -	38	208	246	8,712	35	Det.
49th „ -	Deesa - - -	88	129	217	13,293	61	
50th „ -	Sydney - -	74	30	104	6,357	61	
51st „ -	Aldershot and Portland.	32	149	181	5,957	33	
52nd „ -	Limerick and Malta -	—	175	175	15,443	88	
53rd „ -	London and Quebec, C.W.	37	75	112	4,171	37	
54th „ -	Aldershot and Belfast	51	85	136	7,941	58	
55th „ -	Lucknow - -	66	205	271	21,343	79	
56th „ -	Waterford - -	17	69	86	8,331	97	
57th „ -	Aldershot - -	10	110	120	4,689	39	
58th „ -	Dargeeling - -	42	71	113	2,876	25	Det.
59th „ -	Ceylon - -	23	162	185	20,095	109	Det.
1st Bat. 60th Rifles	Montreal - -	76	193	269	11,168	42	Det.
2nd „ -	Calcutta - -	113	104	217	22,286	103	
3rd „ -	Madras, &c. - -	55	53	108	4,621	43	
4th „ -	New Brunswick -	43	8	51	1,118	22	
61st Foot - -	Bermuda - -	22	19	41	4,290	105	Det.
62nd „ - -	Cork - - -	60	57	117	3,648	31	
63rd „ - -	Dublin and Curragh	51	101	152	6,955	46	
64th „ - -	Malta - - -	72	107	179	7,400	41	Det.
65th „ - -	Curragh and Dublin	23	63	86	7,264	84	
66th „ - -	Jersey and Dublin -	41	96	137	4,628	34	Det.
67th „ - -	Curragh and Portsmouth.	64	69	133	8,234	62	
68th „ - -	Manchester - -	68	46	114	2,464	21	
69th „ - -	London, C.W., and Montreal.	35	74	109	4,082	37	
70th „ - -	Ashton and Kinsale -	6	65	71	9,103	128	Det.
71st „ - -	Fermoy, Dublin, &c. -	38	267	305	11,384	37	Det.
72nd „ - -	Dublin and Limerick	51	138	189	12,054	64	
73rd „ - -	Hong Kong - -	32	71	103	8,809	86	
74th „ - -	Gibraltar - -	32	115	147	7,457	51	
75th „ - -	Gibraltar and Hong Kong.	36	61	97	1,923	20	
76th „ - -	Thayetmyo - -	103	97	200	5,704	29	Det.
77th „ - -	Nowshera - -	28	85	113	6,789	60	
78th „ - -	Montreal - -	50	230	280	3,943	14	Det.
79th „ - -	Roorke - -	1	39	40	2,342	58	Det.
80th „ - -	Aldershot and Fleetwood.	40	155	195	9,076	46	Det.
81st „ - -	Buttevant - -	34	92	126	7,754	62	Det.
82nd „ - -	Kurrachee and Aden	77	47	124	4,745	38	
83rd „ - -	Gibraltar - -	52	56	108	2,340	21	
84th „ - -	Jamaica - -	22	83	105	4,777	45	
85th „ - -	Curragh and Mean Meer.	38	128	166	2,452	21	
86th „ - -	Mauritius - -	43	76	119	1,134	9	Det
87th „ - -	Malta - - -	46	88	134	9,473	71	
88th „ - -	Peshawur and Nowshera.	33	100	133	6,135	46	Det.

APP. III. No. 1.

Regiment.	Station.	On School Books.			Number of Attendances during the Year.	Average Number of Lessons per Man during the Year.	Remarks.
		Non-commissioned Officers.	Privates, Trumpeters, and Drummers.	Total.			
89th foot	Dublin and Athlone	18	174	192	3,952	21	
90th „	Subathoo and Kurnoul.	25	77	102	7,917	77	
91st „	Kamptee and Dover	1	49	50	3,135	62	
92nd „	Jullundur	31	130	161	11,936	74	Det.
93rd „	Ihansie	—	92	92	6,503	71	Det.
94th „	Dover	49	53	102	7,730	75	
95th „	Mhow	40	150	190	6,514	34	
96th „	Poona	16	234	250	10,030	40	
97th „	Plymouth and Aldershot.	39	107	146	9,131	62	
98th „	Aldershot	19	96	115	7,743	67	
99th „	Cape Town	69	110	179	5,868	32	Det.
100th „	Montreal and Glasgow.	62	99	161	1,507	9	
101st „	Cawnpore	23	58	81	7,954	98	Det.
102nd „	Lucknow	62	94	156	8,912	57	
103rd „	Morar	67	183	250	6,369	25	Det.
104th „	Dugshai	9	97	106	4,751	44	
105th „	Dinapore	31	56	87	6,542	75	
106th „	Umballa	29	57	86	4,104	47	
107th „	Allahabad	46	136	182	9,839	54	
108th „	Belgaum	53	92	145	11,091	76	
109th „	Moolt an	36	72	108	8,074	74	
1st Bat. Rifle Brig.	Ottawa	24	98	122	2,579	21	
2nd „	Devonport	34	97	131	7,670	50	
3rd „	Seetapore	35	94	129	13,496	105	
4th „	Weedon and Chester	39	74	113	3,729	33	Det.
		5,549	15,247	20,796	1,012,979	—	
1st West India Reg.	Sierra Leone	25	79	104	8,689	84	
2nd „	Bahamas	19	33	52	3,414	65	Det.
3rd „	Jamaica	37	378	415	2,309	6	
4th „	Barbadoes	20	83	103	9,874	96	
Ceylon Rifles	Ceylon	12	222	234	14,630	62	Det.
Cape Mounted Rifles	Cape of Good Hope	14	80	94	2,434	26	Det.
Canadian Rifles	Canada	13	47	60	4,898	82	Det.
Malta Fencibles	Malta	10	75	85	2,090	25	
		150	997	1,147	48,338	—	
1st Depot Battalion	Chatham	83	283	366	16,937	46	Det.
2nd „	Chatham	—	300	300	25,196	84	
3rd „	Chatham and Shorncliffe.	52	229	281	34,431	123	
4th „	Colchester	43	301	344	11,367	33	
5th „	Parkhurst	2	169	171	3,558	21	Det.
6th „	Walmer	8	163	171	15,768	92	
7th „	Winchester	35	137	172	6,849	39	
8th „	Colchester	21	390	411	26,103	63	
9th „	Preston	28	84	112	5,014	44	
10th „	Shorncliffe	27	203	230	15,940	69	
11th „	Gosport	47	233	280	18,292	65	
12th „	Shorncliffe	74	356	430	20,911	48	
13th „	Pembroke	1	186	187	17,281	92	
14th „	Sheffield	34	200	234	18,604	79	
15th „	Aberdeen	14	321	335	12,154	36	Det.
		469	3,555	4,024	248,405	—	

Regiment.	Station.	On School Books.			Number of Attendances during the Year.	Average Number of Man Lessons per during the Year.	Remarks.
		Non-commissioned Officers.	Privates, Trumpeters, and Drummers.	Total.			
Commissariat Staff	Aldershot	37	80	117	4,915	42	
Garrison	Bathurst	19	59	78	2,858	36	
Commissariat Staff	Dublin	5	38	43	1,072	25	
School of Musketry	Hythe	37	—	37	4,102	110	
School of Music	Kneller Hall	26	115	141	—	—	
Convalescent Depôt	Kussowlie	—	4	4	382	95	
Royal Victoria Hos.	Netley	2	14	16	4,089	255	
Convalescent Depôt	Wellington	—	20	20	562	28	
Royal Horse Artillery		126	330	456	18,380	—	
A. Brigade	Meerut	54	66	120	8,834	74	
B. „	Woolwich	27	93	120	5,650	47	
C. „	Aldershot	48	139	187	12,271	66	
D. „	Bangalore	6	34	40	2,688	67	
E. „	Kirkee	53	49	102	12,864	125	
F. „	Umballa	47	38	85	11,438	134	
Depôt Royal Artilley.	Maidstone	11	149	160	4,087	25	
1st Brigade	Halifax, N.S.	29	95	124	2,813	22	
2nd „	Mauritius	2	28	30	313	10	
3rd „	Montreal	22	53	75	677	9	
4th „	Toronto	29	23	52	2,335	45	
5th „	Madras	22	32	54	2,096	38	
6th „	Portsmouth	50	64	114	11,231	98	
7th „	Plymouth and Woolwich.	22	177	199	8,638	43	
8th „	Lucknow	43	115	158	13,889	87	
9th „	Dublin	28	79	107	2,630	24	
10th „	Malta	8	147	155	3,978	25	
11th „	Woolwich	77	171	248	5,225	21	
12th „	Gosport	64	217	281	9,598	34	
13th „	Dover and Plymouth	23	141	164	12,739	78	
14th „	Ahmedabad	58	65	123	1,620	13	
15th „	Gibraltar	44	54	98	3,142	32	
16th „	Barrackpore	65	203	268	18,265	68	
17th „	Woolwich and Dover	48	144	192	9,522	50	
18th „	Kurrachee	46	91	137	1,692	12	
19th „	Peshawur	58	23	81	7,272	90	
20th „	Kamptee	15	40	55	589	11	
21st „	Mhow	4	27	31	397	13	
22nd „	Morar	64	108	172	13,622	79	
23rd „	Secunderabad	5	10	15	1,584	105	
24th „	Mean Meer	29	39	68	5,772	85	
25th „	Allahabad	31	41	72	4,709	65	
Detached Batteries of Brigades serving in	United Kingdom	182	324	506	22,821	43	
	Colonies	84	332	416	15,395	39	
	India	84	130	214	2,901	14	
Depôt Brig. 1st Div.	Sheerness	50	382	432	32,584	75	
„ 2nd „	Woolwich	68	54	122	8,158	67	
„ 3rd „	Warley	27	136	163	14,438	89	
School of Gunnery	Shoeburyness	8	19	27	996	37	
Royal Engineers.		1,635	4,132	5,767	319,473	—	
	Aldershot	4	36	40	3,352	84	
	Chatham	2	196	198	11,355	57	
	Dover	15	26	41	1,134	28	
	Gibraltar	17	3	20	938	42	
	Malta	27	25	52	1,604	31	
	Quebec	17	30	47	1,021	22	
	Shorncliffe	4	8	12	59	5	
	Weymouth	3	35	38	282	7	
	Woolwich	7	15	22	1,703	77	
		96	374	470	21,448	—	

Appendix III.—No. 2.

App. III.
No. 2.

Table showing the Average Number of Non-commissioned Officers, Privates, &c., whose Names were on the School Books, with the Average Daily Attendances for the Year 1869.

Regiment.	Station.	On School Books.			Number of Attendances during the Year.	Average Number of Lessons per Man during the Year.	Remarks.
		Non-Commissioned Officers.	Privates, Trumpeters, and Drummers.	Total.			
1st Life Guards	Windsor and London	—	27	27	4,165	154	
2nd „	London	5	32	37	5,152	139	
Royal Horse Guards	London and Windsor	6	23	29	2,749	95	
1st Dragoon Guards	Cahir and Manchester	19	31	50	3,521	71	
2nd „ „	Mhow	30	77	107	5,327	50	
3rd „ „	Chichester and Colchester.	23	101	124	7,473	60	
4th „ „	Brighton and Sheffield	17	38	55	3,566	65	
5th „ „	Aldershot and Leeds	16	80	96	3,031	32	
6th „ „	Longford and Newbridge.	9	71	80	6,491	81	
7th „ „	Aldershot	—	34	34	3,637	107	
1st Dragoons	Dublin and Cahir	10	22	32	1,376	43	
2nd „	Cahir and Dublin	17	26	43	4,560	106	
3rd Hussars	Ahmednuggur	39	49	88	7,484	85	
4th „	Meerut	19	53	72	4,103	57	
5th Lancers	Lucknow	11	75	86	4,695	55	
6th Dragoons	Aldershot	8	46	54	4,284	79	
7th Hussars	Sealkote	25	130	155	9,779	63	Det.
8th „	Edinburgh and Dundalk.	3	49	52	1,754	34	
9th Lancers	Newbridge and Hounslow.	31	20	51	6,634	130	
10th Hussars	Aldershot and Brighton	17	67	84	4,479	53	
11th „	Muttra	39	42	81	3,760	46	
12th Lancers	Dublin	53	10	63	2,807	45	
13th Hussars	Toronto and York	40	72	112	4,424	40	
14th „	Dublin and Longford	9	44	53	4,808	91	
15th „	York and Chichester	—	79	79	8,172	103	
16th Lancers	Bangalore	47	15	62	3,057	49	
17th „	Hounslow and Edinburgh.	17	44	61	5,215	86	
18th Hussars	Secunderabad	46	53	99	10,778	109	
19th „	Benares	34	29	63	5,189	82	Det.
20th „	Campbellpore	34	167	201	20,950	104	Det.
21st „	Umballa	43	50	93	2,558	28	
Military Train	Aldershot	28	23	51	5,013	98	
„ „	Woolwich	25	43	68	2,545	37	
Cavalry Depôt	Canterbury	15	110	125	11,299	90	
		735	1,832	2,567	184,835	—	
1st Bat. Gren. Guards	Dublin	27	187	214	14,053	66	Det.
2nd „ „	Windsor and London	26	182	208	11,920	50	
3rd „ „	London and Windsor	24	164	188	15,357	81	
1st Bat. Cold. Guards	London	53	136	189	7,299	39	
2nd „ „	London	54	116	170	9,841	58	Det.
1st Bat. S. Fus. Guards	London	29	162	191	9,786	51	
2nd „ „	London	32	162	194	12,822	66	
Depôt	Warley	15	214	229	30,792	134	
		260	1,323	1,583	111,870	—	

Regiment.	Station.	On School Books.			Number of Attendances during the Year.	Average Number of Lessons per Man during the Year.	Remarks.
		Non-Commissioned Officers.	Privates, Trumpeters, and Drummers.	Total.			
1/1st Foot -	Cannonore - -	40	153	193	8,284	43	Det.
2/1st „ -	Nusseerabad - -	38	83	121	3,132	26	
1/2nd „ -	Poona - - -	15	181	196	9,086	46	Det.
2/2nd „ -	Aldershot and Gosport	68	72	140	7,478	53	
1/3rd „ -	Dugshaie - -	44	38	82	4,947	60	
2/3rd „ -	Aldershot - -	31	47	78	5,864	75	
1/4th „ -	Dover - - -	18	64	82	2,693	33	
2/4th „ -	Dublin and Chester -	51	148	199	7,034	35	
1/5th „ -	Ferozepore - -	31	97	128	6,329	49	
2/5th „ -	Aldershot and Glasgow	35	108	143	11,044	77	
1/6th „ -	Rawul Pindee - -	—	145	145	10,797	74	
2/6th „ -	Aldershot, &c. - -	33	221	254	12,989	51	
1/7th „ -	Saugor - - -	36	48	84	1,377	16	
2/7th „ -	Bury and Aldershot -	34	123	157	9,196	59	
1/8th „ -	Poona - - -	69	238	307	14,927	49	
2/8th „ -	Aldershot and Bury -	2	178	180	10,641	59	
1/9th „ -	King William's Town	21	243	264	3,248	12	
2/9th „ -	Dublin and Warley -	61	108	169	11,000	65	
1/10th „ -	Japan - - -	36	157	193	6,441	33	
2/10th „ -	Secunderabad - -	79	248	327	29,201	89	
1/11th „ -	Fyzabad, &c. - -	30	39	69	3,817	55	
2/11th „ -	Cape of Good Hope -	35	163	198	5,133	26	Det.
1/12th „ -	Aldershot and Carlisle	24	71	95	6,760	71	
2/12th „ -	Jubbulpore - -	76	108	184	1,684	9	Det.
1/13th „ -	Gibraltar - -	44	36	80	7,985	100	
2/13th „ -	Gosport and Aldershot	19	99	118	7,939	67	
1/14th „ -	Cawnpore - -	89	175	264	17,214	65	
2/14th „ -	Melbourne - -	16	60	76	2,377	31	Det.
1/15th „ -	Bermuda - -	42	14	56	2,276	41	Det.
2/15th „ -	Dublin - - -	33	95	128	9,124	71	Det.
1/16th „ -	Halifax, N.S. - -	58	208	266	4,938	19	
2/16th „ -	Dublin and Curragh -	50	207	257	8,156	32	
1/17th „ -	Newry and Dublin -	17	170	187	10,714	58	Det.
2/17th „ -	Jersey - - -	49	186	235	6,571	28	Det.
1/18th „ -	Curragh and Belfast -	49	103	152	12,355	81	
2/18th „ -	Auckland - -	11	45	56	1,704	30	Det.
1/19th „ -	Rawul and Pindee -	20	140	160	7,408	46	
2/19th „ -	Bangalore - -	38	108	146	13,184	90	
1/20th „ -	Bristol and Kilkenny	19	118	137	8,052	59	Det.
2/20th „ -	Natal - - -	45	128	173	10,578	61	Det.
1/21st „ -	Kurrachee - -	81	162	243	11,317	47	Det.
2/21st „ -	Rangoon - -	39	26	65	3,605	55	
1/22nd „ -	Fredericton, N.B., and Cork.	22	51	73	3,586	49	
2/22nd „ -	Sheffield - -	28	81	109	7,045	65	
1/23rd „ -	Bombay and Devonport	31	129	160	6,063	38	
2/23rd „ -	Aldershot - -	30	176	206	9,912	47	
1/24th „ -	Malta - - -	15	119	134	6,406	48	Det.
2/24th „ -	Secunderabad -	79	47	126	3,116	25	
1/25th „ -	Aldershot and Portsmouth.	34	159	193	13,477	70	
2/25th „ -	Bareilly - -	1	63	64	2,739	43	
26th „ -	Calcutta - -	117	93	210	5,297	25	
27th „ -	Chatham - -	33	78	111	11,197	101	Det.
28th „ -	Gibraltar - -	31	70	101	3,325	33	
29th „ -	Canada - -	58	24	82	2,435	30	Det.
30th „ -	Waterford - -	19	67	86	2,553	30	Det.
31st „ -	Malta - - -	50	61	111	4,116	37	Det.
32nd „ -	Fort Beaufort, &c. -	34	38	72	3,824	53	Det.
33rd „ -	Portsmouth - -	37	57	94	3,273	35	
34th „ -	Aldershot and Shorncliffe.	26	60	86	6,521	76	
35th „ -	Aldershot and Bradford.	65	54	119	6,367	54	
36th „ -	Peshawur and Rawul Pindee.	36	83	119	7,727	64	
37th „ -	Shahjehanpore -	86	46	132	5,166	39	Det.
38th „ -	Peshawur - -	33	126	159	12,372	78	
39th „ -	Cork - - -	6	114	120	6,954	58	

APP. III. No. 2.

Regiment.	Station.	On School Books.			Number of Attendances during the Year.	Average Number of Lessons per Man during the Year.	Remarks.
		Non-Commissioned Officers.	Privates, Trumpeters, and Drummers.	Total.			
40th Foot	Carlisle and Mullingar	27	56	83	4,394	53	Det.
41st „	Subathoo	59	154	213	11,852	56	
42nd „	Edinburgh and Aldershot.	57	194	251	17,862	71	Det.
43rd „	Curragh and Dublin	44	111	155	7,942	51	
44th „	Kilkenny	57	102	159	7,463	47	Det.
45th „	Madras	4	132	136	11,130	82	
46th „	Portsmouth	73	53	126	3,498	28	
47th „	Barbadoes and Curragh	36	384	420	17,544	42	Det.
48th „	Malta	50	158	208	14,504	70	
49th „	Deesa	103	109	212	12,129	53	
50th „	Sydney and Devonport	67	57	124	5,153	32	Det.
51st „	Portland	52	166	218	6,221	29	Det.
52nd „	Malta	27	155	182	15,642	86	Det.
53rd „	Quebec and Barbadoes	17	80	97	1,963	20	
54th „	Belfast and Mullingar	76	65	141	6,495	45	
55th „	Chukrata	63	170	233	8,463	36	
56th „	Waterford and Dublin	42	115	157	8,800	56	
57th „	Devonport	28	138	166	6,514	39	
58th „	Allahabad	35	39	74	798	11	Det.
59th „	Poona	41	323	364	31,525	87	
1st Bat. 60th Rifles	Montreal and Ottawa	44	130	174	1,389	8	Det.
2nd „ „	Seetapore	105	101	206	18,095	88	Det.
3rd „ „	Bellary	43	72	115	9,497	83	
4th „ „	St. John, N.B., and Aldershot.	31	18	49	2,322	47	
61st Foot	Bermuda	32	25	57	4,504	79	
62nd „	Lucknow	50	70	120	5,077	42	
63rd „	Fermoy and Kinsale	25	73	98	6,073	62	
64th „	Malta	87	64	151	4,418	29	
65th „	Dublin and Fermoy	30	77	107	7,247	68	
66th „	Curragh	51	210	261	10,918	42	
67th „	Portsea and Aldershot	57	55	112	6,198	55	
68th „	Manchester and Cork	51	46	97	2,435	25	
69th „	Montreal and Quebec	33	178	211	5,195	25	
70th „	Kinsale and Limerick	13	48	61	6,190	101	
71st „	Gibraltar	21	216	237	62,568	264	Det.
72nd „	Limerick and Buttevant	49	146	195	11,856	61	
73rd „	Ceylon	30	88	118	5,858	50	
74th „	Gibraltar	32	82	114	3,552	31	
75th „	Hong Kong	22	174	196	12,116	62	
76th „	Thayetmyo	80	95	175	6,388	37	Det.
77th „	Agra	24	122	146	6,352	44	
78th „	Halifax, N.S.	45	286	331	4,805	14	Det.
79th „	Roorkee	3	62	65	4,374	67	Det.
80th „	Fleetwood and Birr	38	143	181	12,462	69	Det.
81st „	Buttevant and Templemore.	37	72	109	6,776	62	
82nd „	Aden	74	47	121	4,718	39	Det.
83rd „	Gibraltar	52	50	102	1,874	18	
84th „	Jamaica	15	77	92	4,697	51	
85th „	Mean Meer	40	267	307	14,766	48	Det.
86th „	Mauritius	30	59	89	2,416	27	Det.
87th „	Malta	35	120	155	9,751	63	Det.
88th „	Nowshera	25	82	107	4,636	43	Det.
89th „	Athlone and Fermoy	12	176	188	9,591	51	Det.
90th „	Kamptee and Edinburgh.	26	78	104	5,738	55	
91st „	Dover	1	54	55	3,671	66	
92nd „	Jullundur	43	108	151	6,683	44	Det.
93rd „	Jhansie	—	115	115	10,579	92	Det.
94th „	Woolwich	63	139	202	12,626	63	
95th „	Mhow	43	162	205	15,121	73	
96th „	Dum Dum	18	150	168	4,737	28	Det.
97th „	Aldershot and Dover	55	76	131	10,279	78	
98th „	Aldershot and Newcastle.	34	118	152	11,631	77	
99th „	Cape Town and Gosport.	41	167	208	5,213	25	

Regiment.	Station.	On School Books.			Number of Attendances during the Year.	Average Number of Lessons per Man during the Year.	Remarks.
		Non-Commissioned Officers.	Privates, Trumpeters, and Drummers.	Total.			
100th Foot	Glasgow and Manchester.	6	74	80	1,577	20	Det.
101st „	Gosport	50	37	87	4,382	50	
102nd „	Lucknow	35	68	103	5,782	56	
103rd „	Morar	71	162	233	6,771	29	Det.
104th „	Peshawur	3	100	103	5,711	55	
105th „	Meerut	38	105	143	9,009	63	Det.
106th „	Umballa	30	71	101	3,301	33	
107th „	Hazarubagh	18	97	115	6,793	59	
108th „	Belgaum	64	109	173	8,548	49	
109th „	Mooltan	1	130	131	8,546	65	
1st Bat. Rifle Brig.	Ottawa and Montreal	21	72	93	2,292	25	Det.
2nd „ „	Devonport and Aldershot.	28	132	160	11,196	70	
3rd „ „	Dinapore	45	95	140	11,146	80	
4th „ „	Chester and Aldershot	50	57	107	3,030	28	
		5,555	15,725	21,280	1,125,388		
1st West India Reg.	Sierra Leone	18	71	89	6,607	74	
2nd „ „	Barbadoes, &c.	24	58	82	1,137	14	
3rd „ „	Jamaica	5	57	62	3,578	58	
Ceylon Rifles	Ceylon	27	374	401	6,689	17	
Cape Mounted Rifles	Cape of Good Hope	15	89	104	4,976	48	
Canadian Rifles	Canada	5	57	62	3,578	58	
Malta Fencibles	Malta	27	44	71	2,549	36	
		121	750	871	29,114		
1st Depôt Bat.	Chatham	58	156	214	22,860	107	
2nd „	Chatham	1	287	288	27,147	94	
3rd „	Pembroke	15	105	120	12,797	107	
4th „	Colchester	35	254	289	17,752	62	
5th „	Parkhurst	9	92	101	7,875	78	
6th „	Shorncliffe	15	250	265	19,348	73	
7th „	Winchester	75	125	200	9,251	46	
8th „	Colchester	41	245	286	23,238	81	
9th „	Preston	50	121	171	10,020	59	
10th „	Shorncliffe	66	353	419	21,729	52	
11th „	Aberdeen	22	193	215	12,293	57	
		387	2,181	2,568	184,310		
Commissariat Staff	Aldershot	38	88	126	5,429	43	
Garrison	Bathurst	16	48	64	3,063	48	
Convalescent Depôt	Dargeeling	—	13	13	65	5	
Commissariat Staff	Dublin	4	40	44	925	21	
Convalescent Depôt	Kussowlie	7	25	32	1,247	39	
„	Murree	17	37	54	1,062	20	
Royal Victoria Hos.	Netley	1	5	6	2,549	425	
Convalescent Depôt	Poonamalee	—	3	3	206	69	
„ „	Wellington (Madras)	36	37	73	2,206	30	
		119	296	415	16,752		
Royal Horse Artillery							
A. Brigade	Meerut	47	104	151	11,055	73	
B. „	Woolwich	31	40	71	6,939	98	
C. „	Aldershot	59	122	181	11,134	62	
D. „	Bangalore	18	40	58	2,756	48	
E. „	Kirkee	59	35	94	9,936	106	
F. „	Umballa	38	41	79	9,338	118	
Depôt	Maidstone	14	156	170	4,567	27	

App. III.
No. 2.

Regiment.	Station.	On School Books. Non-Commissioned Officers.	On School Books. Privates, Trumpeters, and Drummers.	On School Books. Total.	Number of Attendances during the Year.	Average Number of Lessons per Man during the Year.	Remarks.
Royal Artillery.							
1st Brigade - -	Halifax, N.S. - -	19	59	78	5,785	74	
2nd „ - -	Mauritius, &c. - -	—	—	—	—	—	
3rd „ - -	Montreal and Quebec	21	8	29	1,728	60	
4th „ - -	Toronto and Dublin -	23	42	65	3,023	47	
5th „ - -	St. Thomas's Mount (Madras).	59	60	119	4,794	40	
6th „ - -	Mhow - - -	28	20	48	5,561	116	
7th „ - -	Woolwich - -	12	118	130	9,403	72	
8th „ - -	Lucknow - -	60	82	142	12,704	89	
9th „ - -	Dublin and Ahmedabad.	28	34	62	2,598	42	
10th „ - -	Malta - - -	35	132	167	3,834	23	
11th „ - -	Woolwich - -	33	62	95	4,243	45	
12th „ - -	Portsmouth - -	25	129	154	11,069	72	
13th „ - -	Plymouth - -	20	142	162	10,590	65	
14th „ - -	Ahmedabad and Woolwich.	45	46	91	2,328	26	
15th „ - -	Gibraltar - -	50	90	140	4,629	33	
16th „ - -	Barrackpore - -	57	111	168	11,111	66	
17th „ - -	Dover - - -	41	112	153	5,946	39	
18th „ - -	Kurrachee, &c. -	53	108	161	5,492	34	
19th „ - -	Peshawur, &c. -	52	66	118	7,632	65	
20th „ - -	Kamptee, &c. - -	39	22	61	3,379	55	
21st „ - -	Gosport - -	49	44	93	4,314	46	
22nd „ - -	Morar, &c. - -	72	141	213	15,969	75	
23rd „ - -	Secunderabad, &c. -	74	79	153	4,161	27	
24th „ - -	Mean Meer, &c. -	32	66	98	8,399	86	
25th „ - -	Allahabad, &c. -	35	86	121	6,574	54	
Detached Batteries of Brigades serving in -	United Kingdom -	223	492	715	36,195	51	
	Colonies - -	166	293	459	19,658	43	
	India - - -	175	190	365	19,913	55	
Depôt Brigade -	Woolwich - -	117	79	196	16,232	83	
Coast Brigade, &c. -	Sheerness - -	22	77	99	15,630	157	
School of Gunnery -	Shoeburyness - -	21	70	91	15,637	62	
		1,952	3,598	5,550	334,256		
Royal Engineers.							
	Aldershot - -	26	32	58	5,816	100	
	Camden Fort - -	3	9	12	686	31	
	Chatham - -	1	171	172	13,050	76	
	Dover - - -	5	5	10	520	52	
	Gibraltar - -	20	3	23	1,188	52	
	Malta - - -	25	30	55	1,561	28	
	Portsmouth - -	14	31	45	1,091	24	
	Quebec - -	14	24	38	1,764	46	
	Shorncliffe - -	2	7	9	438	49	
	Weymouth - -	—	37	37	785	21	
	Woolwich - -	6	8	14	1,803	129	
		116	357	473	28,702		

Appendix IV.—No. 1.

Table marking Degrees of Progress as shown by Examination Books in Adult Schools, from Superintending Schoolmasters' and Assistant Inspectors' Reports, 1868.

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.
2nd Life Guards	26	1	15	10	—	26	2	19	5	—	27	2	19	6	—
Royal Horse Guards	8	—	3	5	—	8	—	4	4	—	8	—	3	5	—
1st Dragoon Guards	75	1	42	29	3	75	6	57	11	1	75	4	56	14	1
4th „	6	—	5	1	—	6	—	5	1	—	6	1	5	—	—
5th „	68	4	44	20	—	68	4	56	8	—	68	11	38	17	2
1st Dragoons	19	2	7	8	2	21	1	15	6	—	22	1	11	9	1
2nd „	23	—	17	6	—	23	—	18	5	—	23	—	21	2	—
3rd Hussars	43	—	9	34	—	44	—	22	22	—	44	1	11	32	—
4th „	58	—	50	8	—	58	1	41	16	—	58	1	49	8	—
7th „	14	—	10	4	—	14	—	12	2	—	14	—	5	9	—
8th „	20	—	3	13	4	20	1	16	3	—	20	—	11	7	2
10th „	116	—	61	49	6	116	1	96	18	1	116	—	62	52	2
12th Lancers	60	26	23	1	—	60	24	35	1	—	60	30	29	1	—
13th Hussars	58	5	32	21	—	58	5	29	4	—	58	6	32	20	—
14th „	53	11	38	4	—	62	12	47	3	—	62	15	43	4	—
15th „	15	2	8	5	—	16	2	8	10	—	16	—	8	8	—
17th Lancers	15	—	7	8	—	16	—	11	5	—	17	1	11	5	—
18th Hussars	104	2	81	20	1	104	6	94	3	1	104	7	88	9	—
19th „	15	—	5	10	—	15	—	8	7	—	15	—	1	14	—
20th „	181	2	80	98	1	181	2	79	99	1	181	1	55	124	1
21st „	5	—	4	1	—	5	—	4	1	—	5	—	2	3	—
Cavalry Depôt	50	4	31	14	1	52	5	30	17	—	54	—	25	26	3
Military Train—Woolwich	55	—	31	14	10	55	—	36	19	—	55	—	38	14	3
Grenadier Guards—1st Battalion	72	2	31	36	3	92	1	46	44	1	84	2	48	32	2
2nd „	200	1	58	140	1	200	—	84	113	3	200	—	62	119	19
3rd „	150	7	112	31	—	176	13	143	20	—	171	12	124	35	—
Coldstream Guards—1st Battalion	80	1	50	29	—	100	4	67	26	3	80	3	50	22	5
Scots Fusilier Guards 1st Battalion	100	—	32	66	2	100	2	32	65	1	100	2	27	62	9
2nd „	50	3	21	22	4	50	2	28	17	3	50	7	26	17	—
1st Foot, 1st Batt.	108	14	90	3	1	124	14	104	6	—	115	11	94	9	1
2nd „ 2nd „	125	1	67	57	—	125	—	97	28	—	125	—	85	39	1
3rd „ 1st „	65	—	22	40	3	65	3	38	22	2	65	1	27	37	—
4th „ 2nd „	36	—	18	17	1	36	—	27	9	—	36	2	23	11	—
5th „ 1st „	63	—	45	18	—	63	—	38	25	—	—	—	—	—	—
„ „ 2nd „	108	4	60	42	2	108	7	86	13	2	108	2	49	47	10
6th „ „	247	6	123	116	2	247	10	173	61	3	247	7	136	99	5
7th „ 1st „	12	—	8	4	—	12	1	5	5	1	12	2	2	7	1
8th „ 1st „	75	1	25	43	6	106	1	41	55	9	73	—	30	39	4
„ 2nd „	127	1	53	73	—	127	—	92	35	—	127	8	82	35	2
9th „ 2nd „	19	—	7	10	2	19	—	11	8	—	19	1	8	9	1
10th „ 2nd „	16	1	15	—	—	17	1	16	—	—	17	1	13	3	—
12th „ 1st „	61	—	39	22	—	63	—	46	17	—	63	—	46	17	—
„ „ 2nd „	61	1	33	27	—	61	10	38	12	1	61	—	21	39	1
13th „ 1st „	94	3	26	63	2	94	1	29	63	1	94	10	32	52	—
„ „ 2nd „	55	—	30	24	1	72	—	49	23	—	72	3	33	33	3
14th „ 1st „	10	—	8	2	—	10	—	9	1	—	10	—	7	3	—

APP. IV.
No. 1.

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.
15th Foot, 2nd Batt.	89	—	80	9	—	89	—	75	14	—	89	—	70	19	—
16th „ 1st „	242	25	39	142	36	242	26	57	119	40	242	24	49	111	58
17th „ 1st „	147	2	41	83	21	147	1	94	48	4	147	3	45	86	13
„ „ 2nd „	199	—	22	176	1	199	—	22	174	3	199	5	17	174	3
18th „ 1st „	80	17	32	29	2	80	8	61	9	2	80	6	40	29	5
19th „ 1st „	78	—	35	42	1	78	—	34	43	1	78	—	13	65	—
21st „ 1st „	27	1	9	14	3	27	1	21	4	1	27	1	7	16	3
24th „ 1st „	65	1	50	14	—	66	2	53	11	—	66	12	44	10	—
27th Foot	29	3	20	6	—	44	—	28	16	—	44	5	32	7	—
28th „	78	2	38	30	8	126	1	47	78	—	126	4	55	63	2
29th „	118	—	74	42	2	118	—	68	48	2	118	1	74	39	4
30th „	107	16	41	50	—	107	18	46	43	—	107	23	52	32	—
31st „	47	1	21	25	—	47	1	35	11	—	47	2	28	17	—
33rd „	41	3	30	8	—	41	—	36	5	—	41	3	35	3	—
34th „	60	—	17	43	—	92	3	44	45	—	72	3	17	52	—
35th „	93	10	38	45	—	100	5	53	42	—	99	15	35	49	—
36th „	25	1	17	7	—	25	2	17	6	—	25	—	14	11	—
38th „	26	—	9	17	—	26	—	12	14	—	26	—	11	15	—
39th „	17	2	13	2	—	17	1	14	2	—	17	1	11	5	—
40th „	98	4	71	22	—	98	—	89	9	—	98	6	80	10	2
41st „	77	1	44	32	—	77	1	43	32	1	77	—	35	42	—
42nd „	137	8	88	41	—	137	5	116	16	—	137	30	86	21	—
44th „	56	1	53	2	—	56	—	56	—	—	56	4	52	—	—
48th „	44	—	20	23	1	44	—	29	14	1	44	—	28	16	—
52nd „	61	—	42	18	1	61	—	46	14	1	61	—	34	24	3
53rd „	113	3	70	38	2	113	3	77	32	1	113	9	76	26	2
54th „	55	1	18	31	5	55	6	19	23	7	55	2	22	23	8
56th „	60	—	32	26	2	60	—	41	19	—	60	—	36	24	—
57th „	100	6	72	19	3	100	4	90	6	—	100	6	75	17	2
60th Rifles, 1st Batt.	143	10	53	76	4	143	10	62	62	9	143	16	66	50	11
„ 3rd „	44	—	13	23	8	44	—	24	15	5	44	—	23	19	2
„ 4th „	65	2	39	24	—	65	2	53	10	—	65	4	48	13	—
62nd Foot	36	—	16	11	9	36	—	18	10	8	36	—	9	24	3
63rd „	82	22	26	27	7	82	5	43	32	2	82	12	27	36	7
64th „	108	12	58	38	—	127	10	83	34	—	127	11	86	30	—
65th „	45	3	28	13	1	52	5	44	3	—	52	7	34	11	—
66th „	41	2	28	11	—	42	3	36	3	—	42	2	29	11	—
69th „	109	2	67	40	—	109	2	67	40	—	109	2	81	26	—
71st „	118	20	23	64	11	118	5	51	56	6	118	13	31	64	10
72nd „	42	2	30	10	—	42	7	29	6	—	42	2	28	12	—
74th „	87	1	36	49	1	87	1	34	52	—	87	4	27	54	2
75th „	50	—	12	36	2	50	—	16	34	—	50	—	12	30	8
77th „	45	2	27	16	—	45	2	29	13	—	45	4	23	18	—
78th „	137	22	75	40	—	137	23	61	53	—	137	28	77	32	—
79th „	7	1	5	1	—	7	—	5	2	—	7	1	1	5	—
80th „	149	1	80	63	5	149	1	130	13	5	149	2	121	21	5
81st „	64	4	37	22	1	64	2	43	18	1	64	5	41	18	—
83rd „	107	—	17	81	9	107	—	29	78	—	107	1	30	67	9
86th „	47	6	33	8	—	47	6	33	8	—	47	7	29	11	—
87th „	44	1	34	9	—	44	1	27	16	—	44	—	6	28	—
88th „	86	—	51	23	—	86	—	54	20	—	86	—	54	20	—
90th „	75	1	31	43	—	75	3	35	37	—	75	1	22	52	—
94th „	81	21	48	12	—	91	6	48	37	—	92	19	61	12	—
97th „	117	4	65	48	—	117	13	76	28	—	117	8	66	42	1
98th „	128	13	78	37	—	128	13	105	10	—	128	13	96	16	3
100th „	48	20	21	7	—	48	24	18	6	—	48	24	21	3	—
104th „	47	5	34	8	—	47	6	29	12	—	47	4	17	26	—
Rifle Brigade—															
1st Battalion	113	19	21	73	—	113	5	40	68	—	113	16	23	74	—
2nd „	65	—	32	33	—	65	—	27	36	2	65	6	35	23	1
Royal Canadian Rifles—	55	2	35	18	—	55	2	37	16	—	55	4	36	15	—
1st Depôt Battalion	72	1	26	45	—	81	2	51	27	1	93	6	58	29	—
2nd „	77	2	26	47	2	78	9	48	20	1	80	7	43	30	—
3rd „	80	9	20	51	—	80	11	39	29	1	80	1	37	32	—
4th „	57	2	16	31	3	54	4	20	26	4	55	2	24	27	2

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.
5th Depôt Battalion	40	1	7	31	1	40	1	13	26	—	40	1	8	29	2
6th „	62	—	15	46	1	61	4	31	24	2	65	6	30	29	—
7th „	54	5	34	14	1	67	3	49	15	—	64	1	38	24	1
8th „	80	7	34	39	—	83	11	55	17	—	88	3	51	34	—
10th „	71	1	50	20	—	88	1	50	37	—	88	1	52	35	—
11th „	260	8	98	154	—	316	4	141	171	—	278	9	80	188	1
12th „	104	4	67	31	2	116	8	71	37	—	116	13	64	28	11
Commissariat Staff Corps—															
Aldershot	58	3	37	16	2	58	4	37	15	2	58	9	31	15	3
Royal Victoria Hospital, Netley	51	17	31	3	—	51	11	36	6	—	51	18	27	6	—
Royal Malta Fencible Artillery	48	—	3	45	—	48	—	15	31	2	48	—	5	43	—
Garrison, Attock	12	—	6	6	—	12	—	7	5	—	12	—	5	7	—
Royal Horse Artillery—															
Aldershot	131	5	83	43	—	131	2	102	27	—	131	9	84	35	3
Maidstone	69	—	11	58	—	62	—	34	28	—	70	7	27	36	—
Woolwich	120	7	69	42	2	120	—	92	28	—	120	8	63	42	7
Royal Artillery—															
6th Brigade	92	16	37	39	—	116	11	62	43	—	102	17	47	38	—
7th „	108	—	54	46	8	108	—	62	43	3	108	—	39	35	34
11th „	9	—	6	3	—	9	—	5	4	—	9	—	6	2	1
12th „	84	3	31	49	1	117	—	52	65	—	117	1	46	69	1
„ „	61	4	35	21	1	80	1	60	19	—	80	3	37	39	1
13th „	69	5	34	30	—	75	6	34	34	1	75	9	43	21	2
„ „	85	5	43	37	—	101	7	60	34	—	101	11	55	35	—
15th „	117	2	19	96	—	117	1	17	99	—	117	13	8	96	—
17th „	56	—	35	21	—	119	3	72	44	—	56	—	38	17	1
20th „	27	3	24	—	—	27	2	23	2	—	27	—	20	7	—
Depôt Brigade—															
Warley	21	—	12	7	2	24	5	11	3	2	23	3	9	8	1
Woolwich	45	3	29	8	5	45	—	35	10	—	45	3	34	7	—
Detached Batteries, Dublin	26	1	16	9	—	28	1	25	2	—	28	1	24	3	—
„ „	7	—	7	—	—	7	—	7	—	—	7	—	7	—	—
Ferozepore	8	—	3	5	—	8	—	4	3	1	8	—	—	7	1
Hilsea	76	2	26	46	2	90	6	40	43	1	89	6	22	59	2
Jhansie	11	1	7	3	—	11	—	4	7	—	11	—	2	9	—
Kingston	45	2	8	35	—	45	—	11	34	—	45	1	7	37	—
Leith Fort	19	1	7	11	—	19	—	15	4	—	19	3	11	5	—
Limerick	22	—	10	11	1	22	—	15	7	—	22	—	11	10	1
London, C.W.	17	—	14	3	—	17	—	14	3	—	17	1	12	4	—
Mean Meer	23	—	9	14	—	23	—	16	7	—	23	—	16	7	—
Meerut	76	4	57	15	—	76	11	52	13	—	76	—	45	30	1
Montreal	18	7	11	—	—	18	6	12	—	—	18	2	16	—	—
Peshawur	12	—	7	5	—	12	—	8	4	—	12	—	7	5	—
Quebec	58	2	19	37	—	58	5	12	41	—	58	1	10	47	—
Rawul, Pindee	4	—	4	—	—	4	—	4	—	—	4	—	4	—	—
Sealkote	15	—	7	8	—	15	—	8	7	—	15	—	8	7	—
St. Helen's Island	22	—	4	18	—	22	—	4	18	—	22	—	4	18	—
Toronto	46	4	27	15	—	46	3	34	9	—	46	2	38	6	—
Umballa	29	—	18	11	—	30	1	15	14	—	30	1	10	19	—
Royal Engineers—															
Aldershot	26	—	13	13	—	26	—	17	9	—	26	6	16	4	—
Gibraltar	19	—	8	11	—	19	1	9	9	—	19	—	8	11	—
Point Levis, Quebec	37	—	—	37	—	37	—	—	37	—	37	—	—	37	—

APP. IV.
No. 2.

APPENDIX IV.—No. 2.

TABLE marking Degrees of Progress as shown by Examination Books in Adult Schools, from Superintending Schoolmasters' and Assistant Inspectors' Reports, 1869.

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.
1st Life Guards	14	1	9	4	—	14	1	9	4	—	14	1	9	4	—
2nd „	25	1	21	2	1	25	1	22	2	—	25	1	22	2	—
Royal Horse Guards	22	2	13	7	—	22	1	18	3	—	22	5	12	5	—
1st Dragoon Guards	41	5	17	18	1	41	2	24	15	—	41	8	14	16	3
4th „	27	—	5	22	—	24	—	7	17	—	24	—	6	18	—
5th „	98	5	45	42	6	98	11	64	20	3	98	11	55	24	8
6th „	57	10	43	4	—	57	12	43	2	—	57	8	46	3	—
7th „	26	—	11	15	—	26	—	16	8	2	26	—	18	4	4
1st Dragoons	21	2	19	—	—	21	1	20	—	—	21	1	19	1	—
2nd „	37	3	28	6	—	37	4	31	2	—	37	1	27	9	—
5th Lancers	31	2	21	8	—	31	—	22	9	—	31	—	12	14	5
6th Dragoons	27	—	20	7	—	27	—	25	2	—	27	4	18	5	—
8th Hussars	39	9	25	5	—	39	7	32	—	—	39	15	17	6	1
9th Lancers	16	—	10	6	—	16	—	10	6	—	16	1	11	4	—
11th Hussars	36	4	24	8	—	36	4	25	7	—	36	1	25	10	—
12th Lancers	35	6	24	4	1	35	6	27	2	—	35	6	24	4	1
13th Hussars	95	12	63	20	—	95	13	68	14	—	95	19	66	10	—
14th „	24	—	21	3	—	24	—	20	4	—	24	—	20	4	—
17th Lancers	30	—	21	9	—	30	1	19	9	1	30	4	19	7	—
18th Hussars	54	4	25	21	4	54	—	29	23	2	54	7	20	18	9
19th „	44	4	29	11	—	44	5	30	9	—	44	1	27	16	—
Cavalry Depôt	64	7	20	35	2	134	10	93	31	—	134	15	82	35	2
Military Train—															
Aldershot	121	4	92	23	2	121	5	109	6	1	121	7	101	13	—
Grenadier Guards—															
1st Battalion	114	6	66	35	7	168	2	111	43	2	135	3	76	41	15
2nd „	75	—	39	32	4	120	—	80	36	4	110	2	65	33	10
3rd „	68	—	40	28	—	68	—	50	18	—	61	—	37	22	2
Coldstream Guards—															
1st Battalion	100	8	80	12	—	100	6	75	17	2	100	3	50	44	3
2nd „	100	—	64	32	4	100	3	76	21	—	100	—	59	38	3
Scots Fusilier Guards—															
1st Battalion	100	—	50	50	—	100	2	52	46	—	100	2	60	37	1
2nd „	100	4	70	24	2	100	4	74	19	3	100	2	66	27	5
2nd Foot, 2nd Batt.	73	5	39	26	3	95	8	67	19	1	94	7	48	37	2
3rd „ 2nd „	80	1	60	19	—	80	1	72	7	—	80	—	34	32	14
4th „ 1st „	20	—	16	4	—	20	—	17	3	—	20	1	14	5	—
4th „ 2nd „	32	—	6	26	—	32	—	8	24	—	32	1	4	27	—
5th „ 2nd „	166	16	76	68	6	166	10	137	18	1	166	25	84	53	4
6th „ 2nd „	66	1	28	35	2	98	2	65	28	3	98	4	59	34	1
7th „ 2nd „	78	1	33	43	1	78	2	63	13	—	78	3	51	20	4
10th „ 2nd „	152	1	33	114	4	152	2	42	104	4	152	4	13	125	10
11th „ 1st „	99	1	48	50	—	99	2	44	52	1	99	4	43	51	1
12th „ 1st „	91	4	62	25	—	91	4	76	11	—	91	2	64	23	2
13th „ 1st „	61	1	21	36	3	61	2	28	29	3	61	3	44	14	1
13th „ 2nd „	56	3	19	27	7	56	—	48	8	—	56	—	20	36	—
14th „ 1st „	119	2	98	19	—	119	1	89	29	—	119	4	75	39	1

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.
15th Foot, 2nd Batt.	81	4	46	28	3	85	4	48	31	2	86	2	65	19	—
17th „ 1st „	61	9	40	12	—	63	3	50	9	1	59	6	41	9	3
18th „ 1st „	78	11	38	24	3	78	8	58	12	—	78	13	48	16	—
20th „ 1st „	63	—	28	35	—	76	1	45	29	1	72	—	48	23	1
22nd „ 1st „	27	—	11	12	4	27	—	13	14	—	27	—	7	12	5
23rd „ 2nd „	212	2	68	141	1	212	2	131	79	—	212	4	91	111	6
24th „ 1st „	42	15	17	10	—	42	15	20	7	—	42	10	26	6	—
24th „ 2nd „	76	2	25	49	—	76	2	23	48	3	76	11	39	23	3
27th Foot	87	6	49	32	—	107	7	62	38	—	104	—	66	38	—
28th „	33	2	15	16	—	36	1	13	22	—	36	2	23	11	—
29th „	64	7	20	35	2	134	10	93	31	—	134	15	82	35	2
30th „	33	1	16	14	2	33	2	17	14	—	33	—	23	9	1
31st „	92	7	53	32	—	92	7	53	32	—	92	8	60	24	—
32nd „	43	8	20	11	4	43	5	24	11	3	43	10	21	9	3
33rd „	78	5	28	41	4	80	5	48	27	—	80	13	49	15	3
34th „	126	3	72	50	1	126	3	97	26	—	126	1	92	31	2
35th „	99	4	65	29	1	99	3	69	27	—	99	4	68	22	5
37th „	53	3	40	10	—	53	3	37	13	—	53	2	26	25	—
42nd „	99	2	60	37	—	99	2	90	7	—	99	8	74	17	—
43rd „	18	—	9	10	9	28	—	18	9	1	27	—	8	11	8
45th „	95	4	45	43	3	95	1	56	37	1	95	12	49	31	3
48th „	116	8	89	18	1	116	8	86	21	1	116	9	89	18	—
52nd „	33	3	19	11	—	33	—	23	10	—	33	3	18	10	2
53rd „	76	1	46	29	—	76	1	48	27	—	76	—	45	31	—
54th „	19	3	4	12	—	19	3	7	9	—	19	4	7	8	—
55th „	5	—	4	1	—	5	—	3	2	—	5	—	1	4	—
56th „	105	—	75	19	11	127	—	100	25	2	127	4	101	19	3
57th „	157	5	86	63	3	157	2	104	51	—	157	4	112	39	2
60th Rifles, 1st Batt.	161	23	64	74	—	161	21	65	75	—	161	24	74	63	—
„ 2nd „	79	1	33	44	1	79	—	38	48	—	79	2	27	49	1
„ 3rd „	78	6	50	18	4	78	9	50	15	4	78	17	42	16	3
„ 4th „	31	—	14	13	4	31	—	25	6	—	31	—	12	13	6
62nd Foot	57	2	28	25	2	57	3	31	21	2	57	4	18	32	3
63rd „	35	1	12	21	1	35	—	13	21	1	35	—	16	19	—
64th „	112	24	63	25	—	112	15	65	32	—	112	19	78	15	—
65th „	73	4	53	16	—	73	4	57	12	—	73	7	53	13	—
66th „	77	18	32	24	3	77	15	48	12	2	77	16	47	14	—
67th „	81	3	32	37	9	81	1	64	16	—	81	—	43	24	14
68th „	42	2	26	13	1	42	—	31	11	—	42	1	25	14	2
69th „	92	5	51	36	—	92	5	53	34	—	92	9	52	31	—
70th „	30	—	22	7	1	30	1	22	5	2	30	1	23	6	—
71st „	113	—	36	77	—	124	2	35	85	2	124	4	62	54	4
72nd „	35	2	23	9	1	35	2	26	6	1	35	4	23	6	2
74th „	47	3	31	13	—	53	3	38	12	—	53	17	30	6	—
78th „	198	30	59	109	—	198	30	63	105	—	198	24	71	103	—
79th „	8	5	2	1	—	8	6	1	1	—	8	4	2	2	—
81st „	89	2	68	19	—	89	1	71	17	—	89	5	51	33	—
83rd „	22	—	7	13	2	22	—	8	13	1	22	1	14	7	—
87th „	75	14	40	20	1	75	14	40	30	1	75	15	42	18	—
89th „	115	3	79	31	2	115	3	81	30	1	115	1	78	35	1
91st „	21	—	9	12	—	21	—	18	3	—	21	—	11	10	—
97th „	85	2	54	29	—	113	2	57	54	—	111	1	83	25	2
99th „	52	1	31	19	1	52	1	35	16	—	52	1	20	25	6
100th „	39	—	4	35	—	39	—	5	34	—	39	—	2	35	2
101st „	28	4	19	5	—	35	2	29	4	—	33	2	24	7	—
102nd „	40	4	22	14	—	40	3	15	20	2	40	2	24	14	—
Rifle Brigade—															
1st Batt.	116	5	45	66	—	116	5	46	65	—	116	3	46	67	—
2nd „	103	1	35	64	3	119	1	48	70	—	114	1	59	51	3
4th „	63	2	24	33	4	63	—	44	17	2	63	4	40	15	4
Royal Canadian Rifle Regiment	39	3	28	8	—	39	1	30	8	—	39	3	32	4	—
3rd Depôt Battalion	84	—	16	67	1	87	—	29	56	2	89	—	34	53	2
5th „ „	79	16	33	30	—	93	10	65	18	—	91	18	52	19	2
7th „ „	93	7	56	29	1	102	3	74	25	—	101	8	55	37	1

APP. IV.
No. 2.

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.
Commissariat Staff Corps—															
Aldershot	102	3	54	43	2	102	3	64	33	2	102	7	58	33	4
Royal Malta Fencible Artillery	31	—	3	28	—	31	—	3	28	—	19	—	10	9	—
Royal Horse Artillery—															
A Brigade	65	2	33	30	—	65	2	50	13	—	65	1	32	32	—
B "	42	2	31	5	4	42	3	30	5	4	42	3	24	11	4
D "	63	2	46	14	1	63	3	45	14	1	63	—	53	9	1
Royal Artillery—															
3rd Brigade	123	4	19	87	13	123	3	29	83	8	123	2	24	96	1
5th "	73	3	54	14	2	73	—	65	7	1	73	4	64	3	2
8th "	16	—	16	—	—	16	—	11	5	—	16	—	15	1	—
10th "	44	6	37	1	—	44	6	36	2	—	44	8	35	1	—
11th "	58	1	37	20	—	58	—	42	15	1	58	2	31	22	3
13th "	74	2	32	40	—	96	4	56	36	—	93	2	55	35	—
15th "	78	12	37	29	—	78	10	44	24	—	78	11	57	10	—
16th "	40	2	17	21	—	40	—	23	17	—	40	—	8	32	—
17th "	82	5	44	33	—	97	9	55	33	—	96	11	72	13	—
21st "	29	—	10	19	—	37	—	21	16	—	35	—	14	21	—
Detached Batteries—															
Aldershot	211	11	81	111	8	211	4	149	58	—	211	19	119	59	14
Allahabad	14	—	10	4	—	14	—	10	4	—	14	—	3	11	—
Bareilly	13	—	12	1	—	13	—	9	4	—	13	—	8	5	—
Benares	21	—	13	8	—	21	—	11	10	—	21	—	9	12	—
Bellary	19	—	12	7	—	19	—	8	11	—	19	—	4	12	3
Devonport	37	—	18	19	—	43	—	22	16	5	43	1	30	10	2
Dinapore	16	1	6	9	—	16	1	6	9	—	16	1	3	12	—
Dublin	38	6	22	10	—	40	4	18	18	—	40	19	18	3	—
Hochelaga	13	—	1	12	—	13	—	2	11	—	13	—	1	12	—
Leith Fort	44	—	11	33	—	44	—	7	37	—	44	—	11	33	—
London, C. W.	15	—	12	3	—	15	—	11	4	—	15	—	12	3	—
Seetapore	18	1	11	6	—	18	1	11	6	—	18	—	10	8	—
Toronto	37	4	27	6	—	42	6	24	12	—	42	13	22	7	—
Royal Engineers—															
Aldershot	36	1	19	15	1	36	1	22	13	—	36	1	29	6	—
Chatham	50	1	15	34	—	47	4	30	13	—	50	5	27	18	—
Gibraltar	24	1	11	11	1	24	—	14	10	—	24	—	16	7	1
Quebec	49	—	7	42	—	49	—	3	46	—	49	—	11	38	—

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Return of Certificates of Education in possession of Corps, 31st December 1869.

Regiment.	Station.	Number of Certificates in possession of Non-commissioned Officers and Men.			
		1st Class.	2nd Class.	3rd Class.	Total.
1st Life Guards	London	—	33	32	65
2nd „	London	1	6	42	49
1st Dragoon Guards	Cahir	1	1	3	5
2nd „	Chichester	—	13	16	29
3rd „	Colchester	—	1	—	1
4th „	Manchester	—	25	32	57
5th „	Leeds	2	7	49	58
6th „	Newbridge	101	113	99	313
7th „	Aldershot	—	5	16	21
1st Dragoons	Ballincollig	—	11	32	43
2nd „	Dublin	8	40	29	77
3rd Hussars	Bombay	3	21	29	53
5th Lancers	Bengal	—	48	2	50
6th Dragoons	Aldershot	1	—	9	10
7th Hussars	Bengal	19	17	5	41
8th „	Dundalk	2	1	19	22
10th „	Brighton	—	—	9	9
12th Lancers	Dublin	10	24	37	71
13th Hussars	York	—	3	15	18
14th „	Longford	—	11	8	19
15th „	Bombay	—	—	5	5
16th Lancers	Madras	15	3	1	19
17th „	Edinburgh	—	—	3	3
18th Hussars	Madras	5	25	35	65
19th „	Bengal	—	—	9	9
20th „	Bengal	4	7	41	52
Military Train	Aldershot	—	19	43	62
1st Batt. Gren. Guards	Dublin	2	24	64	90
2nd „ „	London	—	1	—	1
3rd „ „	Windsor	15	21	55	91
1st Batt. Coldst. Grds.	London	—	—	3	3
2nd „ „	London	6	42	18	66
1st „ S. F. Guards	London	—	2	9	11
2nd „ „	London	—	10	9	19
1st. Batt. 1st Foot	Madras	27	27	79	133
2nd „ „	Bombay	5	23	9	37
2nd „ 2nd „	Gosport	—	1	4	5

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Regiment.	Station.	Number of Certificates in possession of Non-commissioned Officers and Men.			
		1st Class.	2nd Class.	3rd Class.	Total.
1st Batt. 3rd Foot -	Bengal - - -	—	18	13	31
2nd „ 3rd „ -	Aldershot - -	4	74	68	146
1st „ 4th „ -	Dover - - -	6	50	71	127
2nd „ 4th „ -	Chester - - -	3	40	8	51
1st „ 5th „ -	Bengal - - -	1	6	8	15
2nd „ 5th „ -	Glasgow - - -	19	20	117	156
2nd „ 6th „ -	Monmouth - -	—	4	61	65
2nd „ 7th „ -	Aldershot - -	2	7	20	29
1st „ 9th „ -	Cape - - -	18	6	3	27
1st „ 10th „ -	Japan - - -	2	15	8	25
2nd „ 10th „ -	Madras - - -	10	24	58	92
2nd „ 11th „ -	Cape - - -	16	74	79	169
1st „ 12th „ -	Carlisle - - -	1	2	9	12
2nd „ 12th „ -	Bengal - - -	1	24	47	72
1st „ 13th „ -	Gibraltar - -	2	17	33	52
2nd „ 13th „ -	Aldershot - -	2	8	33	43
2nd „ 15th „ -	Dublin - - -	19	32	24	75
1st „ 16th „ -	Nova Scotia - -	3	62	83	148
2nd „ 16th „ -	Curragh - - -	8	35	53	96
1st „ 17th „ -	Dublin - - -	5	27	34	66
2nd „ 17th „ -	Jersey - - -	3	31	56	90
2nd „ 18th „ -	Bury - - -	5	52	100	157
1st „ 20th „ -	Kilkenny - - -	—	11	33	44
2nd „ 20th „ -	Cape - - -	15	68	74	157
2nd „ 21st „ -	Burmah - - -	3	57	73	133
1st „ 22nd „ -	Cork - - -	2	54	65	121
2nd „ 22nd „ -	Sheffield - - -	3	27	68	98
1st „ 23rd „ -	Devonport - -	3	1	6	10
2nd „ 23rd „ -	Aldershot - -	—	1	14	15
1st „ 24th „ -	Malta - - -	4	46	40	90
2nd „ 24th „ -	Madras - - -	8	12	32	52
1st „ 25th „ -	Portsmouth - -	2	3	5	10
27th Foot - -	Chatham - -	16	26	28	70
28th „ - -	Gibraltar - -	8	26	52	86
29th „ - -	Jamaica - - -	2	10	31	43
30th „ - -	Waterford - -	3	7	11	21
31st „ - -	Malta - - -	3	33	10	46
32nd „ - -	Cape - - -	6	10	—	16
33rd „ - -	Portsmouth - -	9	44	57	110
34th „ - -	Shorncliffe - -	—	7	54	61
35th „ - -	Bradford - -	3	9	16	28
38th „ - -	Bengal - - -	1	10	84	95
39th „ - -	Bombay - - -	19	15	20	54
40th „ - -	Mullingar - -	1	8	25	34
41st „ - -	Bengal - - -	1	4	7	12
42nd „ - -	Aldershot - -	2	4	29	35
43rd „ - -	Dublin - - -	2	4	12	18
44th „ - -	Enniskillen - -	2	24	19	45
45th „ - -	Madras - - -	9	18	27	54
47th „ - -	Dublin - - -	16	39	36	91
48th „ - -	Malta - - -	11	36	47	94

Regiment.	Station.	Number of Certificates in possession of Non-commissioned Officers and Men.			
		1st Class.	2nd Class.	3rd Class.	Total.
49th Foot	Bombay	7	13	5	25
50th „	Bristol	6	4	11	21
51st „	Portland	2	1	20	23
52nd „	Malta	7	32	91	130
54th „	Athlone	2	22	19	43
55th „	Bengal	2	18	5	25
56th „	Dublin	—	4	27	31
57th „	Devonport	2	5	28	35
59th „	Bombay	6	29	80	115
3rd Batt. 60th Rifles	Madras	18	9	18	45
4th „ 60th „	Aldershot	4	14	17	35
62nd Foot	Bengal	1	9	44	54
63rd „	Kinsale	—	16	26	42
64th „	Malta	7	28	22	57
65th „	Fermoy	1	8	8	17
68th „	Cork	—	2	4	6
69th „	Quebec	—	3	15	18
71st „	Gibraltar	6	36	48	90
72nd „	Buttevant	13	60	50	123
73rd „	Ceylon	—	—	17	17
74th „	Gibraltar	5	37	25	67
75th „	Hong Kong	—	24	15	39
76th „	Burmah	26	8	7	41
77th „	Bengal	5	28	69	102
78th „	Nova Scotia	8	30	36	74
79th „	Bengal	3	5	2	10
80th „	Birr	—	13	25	38
81st „	Templemore	1	19	20	40
83rd „	Gibraltar	5	9	14	28
85th „	Bengal	1	3	3	7
86th „	Mauritius	2	11	5	18
87th „	Malta	12	37	31	80
88th „	Bengal	2	1	—	3
89th „	Fermoy	1	26	44	71
90th „	Edinburgh	—	12	32	44
91st „	Dover	—	18	12	30
93rd „	Bengal	1	8	4	13
94th „	Woolwich	—	8	8	16
95th „	Bombay	2	28	70	100
97th „	Dover	—	10	37	47
98th „	Newcastle-on-Tyne	—	5	59	64
99th „	Gosport	3	9	3	15
100th „	Manchester	—	2	14	16
103rd „	Bengal	4	68	38	110
104th „	Bengal	3	—	1	4
105th „	Bengal	1	3	61	65
106th „	Bengal	6	25	61	92
1st Batt. Rifle Brigade	Montreal	—	27	17	44
2nd „ „	Aldershot	1	5	9	15
4th „ „	Aldershot	1	4	1	6
Ceylon Rifles	Ceylon	—	96	131	227

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Regiment.	Station.	Number of Certificates in possession of Non-commissioned Officers and Men.			
		1st Class.	2nd Class.	3rd Class.	Total.
Cape Rifles	Cape	—	12	25	37
1st Depôt Battalion	Chatham	5	11	64	80
2nd „ „	Chatham	10	27	37	74
5th „ „	Parkhurst	—	2	2	4
6th „ „	Shorncliffe	4	29	73	106
7th „ „	Winchester	4	7	13	24
8th „ „	Colchester	—	2	—	2
9th „ „	Preston	9	17	30	56
10th „ „	Shorncliffe	1	11	39	51
11th „ „	Aberdeen	10	9	23	42
Military Store Staff Corps.	Woolwich	2	20	24	46
Convalescent Depôt	Wellington, Madras	6	13	36	55
A. Brigade R. H. Art.	Bengal	—	7	11	18
B. „ „	Woolwich	1	12	33	46
C. „ „	Aldershot	1	8	17	26
E. „ „	Bombay	—	12	15	27
F. „ „	Bengal	—	21	30	51
1st Brigade R. Artillery	Nova Scotia	17	—	—	17
3rd „ „	Quebec	21	56	81	158
4th „ „	Dublin	6	32	24	62
6th „ „	Bombay	8	17	7	32
7th „ „	Woolwich	10	52	39	101
8th „ „	Bengal	12	19	15	46
9th „ „	Bombay	4	64	77	145
10th „ „	Malta	7	85	54	146
11th „ „	Woolwich	2	28	29	59
12th „ „	Portsmouth	—	—	7	7
13th „ „	Plymouth	2	54	112	168
15th „ „	Gibraltar	14	22	32	68
16th „ „	Bengal	1	11	12	24
17th „ „	Dover	2	26	48	76
20th „ „	Madras	7	20	40	67
21st „ „	Gosport	4	11	7	22
23rd „ „	Madras	6	25	51	82
25th „ „	Bengal	1	3	4	8
Depôt „ „	Woolwich	8	61	68	137
Coast „ „	Sheerness	3	4	3	10
Royal Engineers	Aldershot	—	14	27	41

Appendix V.—No. 2.

App. V. No. 2.

Sir, Gibraltar, 28th August, 1869.

With reference to your letter of the 12th instant, I have the honour to transmit, for the information of the Council of Education, letters from the commanding officers of the several corps serving on this station, giving their views on the subject of school certificates; and I venture to avail myself of this opportunity of offering a few observations on the same question.

Progress made lately in the regimental schools.

1. Since my annual report of the 8th February last there has been considerable progress made and more interest shown generally towards carrying out a better system of examination of the qualifications of non-commissioned officers for promotion in this garrison, and, by means of the establishment of a special class, towards obtaining men better fitted to fill vacancies.

The 15th brigade Royal Artillery has lately established a system of school certificates for promotion.

The 28th Regiment has now a special class, and the possession of army school certificates for promotion is rendered compulsory.

The 71st Regiment has also established a special class, and obliges non-commissioned officers to hold certificates differing little from the army school certificates.

The 74th Regiment likewise has adopted the special class system, and it is the intention to render the possession of school certificates obligatory in cases of future promotion.

The remaining two regiments—1st battalion 13th and 83rd—had already special classes, and carried out a system of school certificates for promotion.

Special class system adopted by all commanding officers.

2. It will thus be seen that the commanding officers of all the corps now here are agreed upon the advantages of the special class system, and have carried it out. The full advantages can, however, only be reaped after it has been in operation for some years, and when the men brought forward by means of it obtain the higher grades of non-commissioned officers. It seems to me therefore of importance that the system should be made compulsory.

School certificates adopted by all commanding officers.

3. The commanding officers have also, all of them, adopted school certificates as a test for promotion, though differing in some degree in their standards and as to their modes of carrying out the examinations.

Examinations for school certificates.

4. It is mainly, I consider, in respect of the examinations that their system is defective. These are too much in the hands of the regimental schoolmasters. It is little use a commanding officer adopting the same standards as the Council in their certificates, or some near approach to it, if he cannot ensure that the examinations are carried out under as stringent rules as those made under the assistant-inspector of schools. Were the same "type of examination" rigidly followed as is directed to be used by the assistant-inspector for army school certificates, then, no doubt, they would be more satisfactory; but this is not likely to be the case without proper supervision. In some regiments, doubtless, the questions given are easier than in others; and, again, the number of errors to disqualify probably varies in different corps, or even in the same on different occasions.

By the instructions issued, dated 1st October 1864, paragraph 15, the Council—no doubt for good reasons—does not permit even the superintending schoolmaster to set the questions or to determine upon the merits of the candidate's papers; much less should the regimental schoolmaster virtually do so.

Special class will enable non-commissioned

5. I think it may be taken as granted that in regiments where the special class system has been in force for a year or upwards there will be no difficulty in securing a sufficient supply of eligible men for the

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No. 2.

position of corporal, who will be quite competent to take up third-class certificates; and that these men again, when the time arrives for their promotion to sergeant, will be able to obtain second-class certificates.

officers to obtain required certificates.

6. Taking the infantry as it is now composed, I consider that the second and third class army school certificates are well adapted for the purposes of promotion, and I do not see any present necessity for altering these standards.

Second and third class certificates well adapted for sergeants and corporals.

A third-class certificate is, in my opinion, as much as the soldier should at present be expected to obtain to render him eligible for the rank of corporal; and, similarly, a second-class certificate answers the purpose for promotion to sergeant.

First-class certificates should be optional.

7. With regard to first-class certificates, I should be inclined to leave the possession of them optional, merely urging commanding officers to point out that the possessors of them would be looked upon with additional favour, and stand a better prospect of any preferment offering,

Certificates, if compulsory, would raise class of non-commissioned officers.

8. I certainly believe that were the possession of certificates for non-commissioned officers rendered compulsory, the class of non-commissioned officers would in a few years be greatly raised, and would as a consequence be more respected and looked up to by the men. More pains would be taken in the selection and training of young soldiers, specially with the object of fitting them for the rank of non-commissioned officers.

Exceptions when certificate could not be compulsory.

9. In time of war, and under certain other circumstances and situations, a regiment may not be able to organize a special class. When this is the case it would of course be difficult and perhaps not feasible to obtain men for promotion in possession of certificates. Then, again, now and then a corporal may specially distinguish himself, or prove his capacity in other ways, so that, although not in possession of the required certificate, his commanding officer may be desirous of rewarding him by promotion.

These cases, however, would be exceptional, and each could, in order to afford some check to abuse, be specially reported to higher authority.

Recommendations.

10. To sum up, I venture to recommend for the consideration of the Council:—

First.—That paragraph 454 of the Queen's Regulations should be altered, as suggested in my annual report of February last, so as to render the formation of a special class compulsory, so many men per company attending according to the circumstances in which the regiment may be placed, and at the discretion of the general officer commanding the district or station; commanding officers not to discontinue or reduce the number attending, except under particular circumstances which should be reported to the general officer.

Second,—That except when a regiment is engaged on active service, or under certain other exceptional situations which should be specially reported to higher authority, the possession of army school certificates be rendered compulsory; third class for corporals, and second class for sergeants; first class optional. Exception to be made in the case of any soldier who may have specially distinguished himself or proved his capacity in other ways, and who his commanding officer may be desirous of promoting although not in possession of a certificate; such cases, however, to be specially reported to higher authority.

Third.—That when the examinations carried out under the assistant-inspector or superintending schoolmaster are found to furnish an insufficient number of men for promotion, boards of examinations should be assembled consisting of a field officer and two captains; such examinations to be carried out in a similar manner to those made by the assistant-inspector, under the Council's instructions contained in the "type of examination" paper furnished to that officer.

I have, &c.

W. Bellairs,
Lieut.-Colonel, A.A.G.,
Local Inspector Army Schools.

The Secretary,
Council of Military Education.

Appendix VI.—No. 1.

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Table showing the Number of Children in Regimental Schools receiving Instruction from the Schoolmaster and Schoolmistress, and of those attending the Industrial Schools for the Year 1868.

Regiment.	Station.	Under Schoolmaster.		Under Schoolmistress.		Total.	Attending Industrial School.
		Boys.	Girls.	Boys.	Girls.		
1st Life Guards	Windsor	13	22	27	31	93	58
2nd „	London	42	22	22	16	102	47
Royal Horse Guards	London	13	17	26	25	81	39
1st Dragoon Guards	Aldershot and Sheffield	12	11	16	18	57	29
2nd „	Mhow	6	7	14	14	41	34
3rd „	Ahmednuggur & Winchester	12	9	12	7	40	12
4th „	Aldershot and Brighton	15	14	19	22	70	43
5th „	Aldershot	23	18	20	34	95	57
6th „	Dublin and Longford	14	3	28	24	69	38
7th „	Colchester	9	7	16	14	46	23
1st Dragoons	Longford and Dublin	8	7	22	26	63	29
2nd „	Dundalk and Cahir	16	7	33	21	77	51
3rd Hussars	Hounslow and Chichester	20	12	23	30	85	46
4th „	Meerut	6	2	11	10	29	23
5th Lancers	Lucknow	12	4	14	18	48	35
6th Dragoons	Manchester	9	8	13	6	36	26
7th Hussars	Sealkote	5	4	3	7	19	13
8th „	Edinburgh	9	7	11	21	48	30
9th Lancers	Cahir and Newbridge	11	14	21	23	69	57
10th Hussars	Aldershot	23	16	23	40	102	69
11th „	Muttra	5	3	11	13	32	27
12th Lancers	Dublin and Dundalk	5	6	14	7	32	21
13th Hussars	Toronto	4	3	17	11	35	20
14th „	Newbridge and Dublin	17	10	42	32	101	75
15th „	York	18	18	24	22	82	55
16th Lancers	Bangalore	14	12	14	14	54	24
17th „	Brighton and Hounslow	12	9	18	16	55	29
18th Hussars	Secunderabad	25	10	15	7	57	28
19th „	Benares	13	4	11	6	34	7
20th „	Campbellpore	8	7	10	8	33	15
21st „	Umballa	2	1	4	7	14	11
Military Train	Aldershot	29	27	29	30	115	63
„	Woolwich	9	8	29	19	65	38
Cavalry Depôt	Canterbury	48	42	70	72	232	128
		487	371	682	671	2,211	1,300
1st Bat. Gren. Guards	London	17	7	10	9	43	24
2nd „ „	London	26	17	18	28	89	40
3rd „ „	Dublin	15	9	12	12	48	17
1st Bat. Cold. Guards	Windsor and London	12	12	14	16	54	35
2nd „ „	London and Windsor	14	11	8	18	51	25
1st Bat. S. F. Guards	London	33	23	15	18	89	43
2nd „ „	London	11	9	9	16	45	17
	Vict. Lodg. House	—	—	21	33	54	38
		128	88	107	150	473	239

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Regiment.	Station.	Under Schoolmaster.		Under Schoolmistress.		Total.	Attending Industrial School.
		Boys.	Girls.	Boys.	Girls.		
1st Bat. 1st Foot	Cannanore	12	12	9	15	48	25
2/1st "	Nusseerabad	7	4	14	16	41	33
1/2nd Foot	Aden	19	11	17	12	59	10
2/2nd "	Athlone and Aldershot	8	7	18	16	49	40
1/3rd "	Meerut	11	6	11	20	48	24
2/3rd "	Bristol	11	18	27	21	77	39
1/4th "	Dover	15	7	20	10	52	30
2/4th "	Dublin	7	10	12	12	41	34
1/5th "	Ferozepore	10	7	18	10	45	34
2/5th "	Dover and Aldershot	23	18	23	22	86	47
1/6th "	Rawul Pindee	5	8	13	15	41	35
2/6th "	Aldershot	14	15	16	19	64	33
1/7th "	Saugor	15	4	5	14	38	23
2/7th "	Bury (Lancashire)	5	3	20	19	47	18
1/8th "	Malta and Poona	11	4	12	25	52	35
2/8th "	Aldershot	25	12	21	22	80	41
1/9th "	King William's Town	29	21	29	30	109	80
2/9th "	Japan and Dublin	6	4	11	19	40	23
1/10th "	Japan	11	5	16	32	64	44
2/10th "	Secunderabad	19	15	34	48	116	97
1/11th "	Fyzabad	17	29	22	22	90	73
2/11th "	Cape of Good Hope	7	8	11	18	44	37
1/12th "	Devonport	16	15	25	16	72	54
2/12th "	Jubbulpore	15	11	13	23	62	38
1/13th "	Gibraltar	7	4	16	12	39	23
2/13th "	Portland and Gosport	11	12	11	16	50	24
1/14th "	Malta	7	4	22	13	46	23
2/14th "	Melbourne	35	20	8	10	73	48
1/15th "	Bermuda	32	17	28	20	97	58
2/15th "	Gibraltar and Cork	22	16	18	11	67	43
1/16th "	Montreal and Halifax	15	12	19	20	66	36
2/16th "	Barbadoes	35	30	18	22	105	56
1/17th "	Curragh and Newry	15	26	38	35	114	83
2/17th "	Dublin and Mullingar	14	18	26	20	78	68
1/18th "	Edinburgh and Curragh	14	21	13	11	59	26
2/18th "	New Zealand	29	28	18	11	86	52
1/19th "	Rawul Pindee	6	6	11	17	40	34
2/19th "	Bangalore	13	14	15	19	61	48
1/20th "	Aldershot	9	9	8	19	45	30
2/20th "	Cape of Good Hope	18	17	18	12	65	38
1/21st "	Enniskillen and Curragh	24	15	16	17	72	41
2/21st "	Rangoon	23	11	12	30	76	41
1/22nd "	Fredericton	12	9	9	6	36	24
2/22nd "	Newcastle-on-Tyne	15	16	13	15	59	24
1/23rd "	Colaba	22	17	12	9	60	38
2/23rd "	Newport (Mon.)	14	12	27	16	69	24
1/24th "	Malta	10	7	10	13	40	29
2/24th "	Rangoon	21	3	8	6	38	10
1/25th "	Glasgow	17	18	34	25	94	39
2/25th "	Bengal	16	18	13	13	60	9
26th "	Dum Dum	6	9	29	31	75	68
27th "	Dover	11	11	11	15	48	32
28th "	Belfast and Gibraltar	10	7	18	7	42	31
29th "	Toronto	10	6	8	12	36	23
30th "	Quebec and Halifax	15	9	20	20	64	48
31st "	Malta	4	2	7	7	20	16
32nd "	Mauritius	7	4	16	23	50	43
33rd "	Portsmouth	21	11	17	16	65	27
34th "	Portsmouth and Aldershot	6	6	10	9	31	20
35th "	Portsmouth	7	11	9	10	37	29
36th "	Peshawur	9	3	5	6	23	9
37th "	Bareilly	11	7	15	15	48	37
38th "	Sealkote	10	13	24	27	74	64
39th "	Kinsale and Fermoy	29	19	27	23	98	48
40th "	Aldershot and Carlisle	15	18	16	17	66	32
41st "	Agra	10	2	27	26	65	54
42nd "	Stirling and Edinburgh	3	7	9	5	24	19
43rd "	Jersey	8	10	14	17	49	39
44th "	Kilkenny	17	10	9	17	53	24
45th "	Madras	17	29	20	25	91	70

Regiment.	Station.	Under Schoolmaster.		Under Schoolmistress.		Total.	Attending Industrial School.
		Boys.	Girls.	Boys.	Girls.		
46th Foot	Poona and Parkhurst	8	11	11	9	39	20
47th „	Halifax, N.S.	11	4	12	21	48	37
48th „	Fermoy and Malta	11	9	9	15	44	21
49th „	Deesa	8	4	32	26	70	12
50th „	Sydney	18	20	9	9	56	25
51st „	Aldershot and Portland	16	16	15	13	60	38
52nd „	Limerick and Malta	14	9	10	11	44	24
53rd „	Quebec	9	6	21	20	56	31
54th „	Aldershot and Belfast	10	11	13	9	43	24
55th „	Lucknow	27	20	23	20	90	63
56th „	Waterford	8	7	8	5	28	15
57th „	Aldershot	8	8	31	25	72	45
58th „	Dargeeling	14	11	12	21	58	44
59th „	Ceylon	17	16	22	19	74	39
1st Bat. 60th Rifles	Montreal	5	4	13	23	45	31
2nd „	Calcutta	15	14	15	21	65	24
3rd „	Madras	19	23	22	25	89	45
4th „	St. John, N.B.	13	4	12	21	50	36
61st Foot	Bermuda	6	5	22	22	55	38
62nd „	Cork	33	30	37	43	143	65
63rd „	Curragh	24	16	30	28	98	53
64th „	Malta	21	16	17	22	76	42
65th „	Curragh and Dublin	10	4	24	16	54	36
66th „	Dublin	5	5	9	17	36	19
67th „	Curragh and Portsmouth	18	13	20	20	71	24
68th „	Manchester	13	12	30	23	78	55
69th „	Canada	5	10	12	24	51	35
70th „	Ashton and Kinsale	2	2	4	5	13	10
71st „	Dublin and Gibraltar	5	5	17	14	41	33
72nd „	Dublin and Limerick	10	6	8	8	32	21
73rd „	Hong Kong	5	5	6	4	20	12
74th „	Gibraltar	14	5	12	14	45	23
75th „	Gibraltar	11	3	23	30	67	40
76th „	Thayetmyo	14	8	27	23	72	57
77th „	Nowshera	3	4	—	6	13	11
78th „	Montreal	9	9	17	17	52	41
79th „	Roorkee	6	8	7	7	28	22
80th „	Aldershot and Fleetwood	8	6	14	12	40	21
81st „	Buttevant	17	12	6	7	42	19
82nd „	Kurrachee and Aden	10	7	4	11	32	20
83rd „	Gibraltar	13	7	15	16	51	53
84th „	Jamaica	8	4	6	9	27	18
85th „	Mean Meer	5	3	14	7	29	24
86th „	Mauritius	7	12	18	10	47	22
87th „	Malta	16	10	31	38	95	63
88th „	Peshawur	11	15	7	10	43	20
89th „	Athlone	13	13	16	10	52	24
90th „	Subathoo	12	11	4	7	34	18
91st „	Kamptee and Dover	8	7	4	4	23	7
92nd „	Jullunder	6	8	16	4	34	28
93rd „	Jhansie	21	11	13	13	58	24
94th „	Dover	12	7	12	9	40	24
95th „	Mhow	30	27	16	17	90	35
96th „	Poona	12	3	25	20	60	37
97th „	Aldershot	11	12	11	11	45	28
98th „	Aldershot	31	18	19	23	91	53
99th „	Cape Town	32	18	20	21	91	38
100th „	Montreal and Glasgow	13	4	12	9	38	24
101st „	Cawnpore	16	16	13	13	58	22
102nd „	Lucknow	38	33	33	16	120	66
103rd „	Morar	13	14	15	18	60	46
104th „	Dugshai	18	13	13	12	56	31
105th „	Dinapore	13	16	20	21	70	37
106th „	Umballa	19	11	6	21	57	31
107th „	Allahabad	7	19	15	19	60	45
108th „	Belgaum	20	13	31	22	86	35
109th „	Mooltan	27	18	17	12	74	36
1st Bat. Rifle Brigade	Ottawa	8	9	14	12	43	25
2nd „ „	Devonport	13	19	20	29	81	69

APP. VI.
No. 1.

Regiment.	Station.	Under Schoolmaster. Boys.	Under Schoolmaster. Girls.	Under Schoolmistress. Boys.	Under Schoolmistress. Girls.	Total.	Attending Industrial School.
3rd Bat. Rifle Brigade	Seetapore	17	8	17	10	52	12
4th „ „	Chester	6	3	17	10	36	21
		1,956	1,598	2,295	2,361	8,210	4,936
1st West India Regt.	Sierra Leone	4	3	5	6	18	14
2nd „ (Left Wing)	Cape Coast Castle	8	2	2	2	14	—
3rd „	Jamaica	9	5	12	12	38	—
4th „	Barbadoes	8	15	3	3	29	14
Ceylon Rifles	Ceylon	276	—	—	—	276	18
Cape Mounted Rifles	Cape of Good Hope	19	4	7	12	42	19
Canadian Rifles	Canada	160	139	158	66	623	360
Malta Fencibles	Malta	6	—	—	—	6	—
		490	168	187	201	1,046	425
1st Depôt Battalion	Chatham	26	14	27	37	104	65
2nd „	Chatham	18	18	20	28	84	52
3rd „	Chatham	26	14	29	25	94	50
4th „	Colchester	45	27	27	28	127	77
5th „	Parkhurst	33	29	39	21	122	61
6th „	Walmer	17	9	33	33	92	53
7th „	Winchester	35	20	32	35	122	52
8th „	Colchester	18	18	24	36	96	65
9th „	Preston	12	18	35	55	120	100
10th „	Shorncliffe	27	34	40	31	132	78
11th „	Gosport	26	9	47	41	123	80
12th „	Shorncliffe	15	15	26	29	85	50
13th „	Pembroke	30	22	31	36	119	71
14th „	Sheffield	24	18	31	33	106	64
15th „	Aberdeen	25	27	47	69	168	143
		377	292	488	537	1,694	1,061
Commissariat Staff	Aldershot	31	18	20	23	92	48
Garrison	Bathurst	1	2	—	—	3	—
Musketry Depôt	Gravesend	—	—	13	16	29	13
School of Musketry	Hythe	10	9	13	14	46	—
Depôt	Kussowlie	10	15	14	15	54	44
Depôts	Landguard Fort	7	2	2	5	16	—
Royal Victoria Hos.	Netley	32	29	27	23	102	56
Depôt	Palaveram	98	68	43	47	256	68
„	Poonamallee	18	25	14	16	73	38
R. M., Col.	Sandhurst	31	35	25	23	114	71
Depôt	Wellington	17	10	11	17	55	26
		255	204	182	199	840	364
Royal Horse Artillery.							
A. Brigade	Meerut	11	6	17	19	53	24
B. „	Woolwich	104	88	38	54	284	151
C. „	Aldershot	27	25	45	47	144	91
D. „	Bangalore	32	12	27	24	95	35
E. „	Kirkee	14	17	15	15	61	32
F. „	Umballa	6	4	9	5	24	18
Depôt	Maidstone	15	20	14	16	65	33
Royal Artillery.							
1st Brigade	Halifax, N.S.	17	22	23	16	78	60
2nd „	Mauritius	1	3	1	2	7	6
3rd „	Montreal	29	27	43	34	133	103
4th „	Toronto	25	22	23	31	101	70
5th „	Madras	60	45	29	37	171	117
6th „	Portsmouth	48	32	50	55	185	77

Regiment.	Station.	Under Schoolmaster.		Under Schoolmistress.		Total.	Attending Industrial School.
		Boys.	Girls.	Boys.	Girls.		
7th Brigade	Plymouth and Woolwich	31	20	46	45	142	93
8th „	Lucknow	14	10	20	25	69	46
9th „	Dublin	20	22	39	38	119	52
10th „	Malta	37	26	37	35	135	51
11th „	Woolwich	25	14	11	18	68	38
12th „	Gosport	54	42	45	45	186	64
13th „	Dover and Plymouth	26	16	47	37	126	68
14th „	Ahmedabad	11	13	17	15	56	37
15th „	Gibraltar	28	23	41	48	140	95
16th „	Barrackpore	11	7	13	13	44	29
17th „	Woolwich and Dover	26	26	26	30	108	74
18th „	Kurrachee	34	27	18	12	91	40
19th „	Peshawur	8	7	11	14	40	20
20th „	Kamptee	31	22	16	19	88	—
21st „	Mhow	16	8	7	6	37	21
22nd „	Morar	16	19	13	21	69	47
23rd „	Secunderabad	12	14	15	23	64	36
24th „	Mean Meer	4	9	12	12	37	33
25th „	Allahabad	7	5	12	11	35	7
Detached Batteries of Brigades serving in	United Kingdom	165	129	168	199	661	275
	Colonies	52	39	32	35	158	53
	India	23	24	27	28	102	30
1st Division	Sheerness	43	25	27	27	122	63
2nd „	Woolwich	125	92	56	56	329	147
3rd „	Warley	31	29	34	25	119	69
School of Gunnery	Shoeburyness	42	40	52	55	189	125
Children's Schools	Woolwich Common	—	—	73	81	154	103
	„ Camb. Cottages	—	—	61	75	136	70
		1,281	1,031	1,310	1,403	5,025	2,603
Royal Engineers.							
	Aldershot	28	15	30	30	103	51
	Chatham	43	18	44	74	179	135
	Gibraltar	11	11	15	20	57	46
	Malta	20	4	7	4	35	11
	Quebec	1	3	13	11	28	27
		103	51	109	139	402	270

App. VI.
No. 2.

Appendix VI.—No. 2.

Table showing the Number of Children in Regimental Schools receiving Instruction from the Schoolmaster and Schoolmistress, and of those attending the Industrial Schools, for the Year 1869.

Regiment.	Station.	Under Schoolmaster.		Under Schoolmistress.		Total.	Attending Industrial School.
		Boys.	Girls.	Boys.	Girls.		
1st Life Guards	Windsor and London	27	30	36	28	121	76
2nd „ „	London	28	22	23	16	89	37
Royal Horse Guards	London and Windsor	11	16	28	34	89	44
1st Dragoons „	Sheffield and Manchester	13	12	18	17	60	35
2nd „ „	Mhow	5	5	13	13	36	31
3rd „ „	Chichester and Colchester.	9	5	18	18	50	36
4th „ „	Brighton and Sheffield	8	10	13	14	45	29
5th „ „	Aldershot and Leeds	17	11	25	32	85	44
6th „ „	Longford and Newbridge	17	13	24	26	80	53
7th „ „	Aldershot	9	8	13	16	46	24
1st Dragoons	Dublin and Cahir	16	19	25	24	84	49
2nd „	Cahir and Dublin	18	14	36	24	92	68
3rd Hussars	Ahmednuggur	16	8	10	15	49	30
4th „	Meerut	14	5	13	18	50	36
5th Lancers	Lucknow	15	2	20	29	66	51
6th Dragoons	Aldershot	12	6	18	7	43	28
7th Hussars	Sealkote	7	3	6	10	26	14
8th „	Edinburgh and Dundalk	10	9	15	27	61	36
9th Lancers	Newbridge and Hounslow.	17	24	23	20	84	66
10th Hussars	Aldershot and Brighton	12	17	15	27	61	40
11th „	Muttra	6	5	9	14	34	28
12th Lancers	Dublin	7	7	17	15	46	20
13th Hussars	Toronto and York	9	7	18	15	49	23
14th „	Dublin and Longford	23	17	22	16	78	41
15th „	York and Chichester	11	12	28	20	71	54
16th Lancers	Bangalore	20	15	13	23	71	37
17th „	Hounslow and Edinburgh.	10	13	18	14	55	32
18th Hussars	Secunderabad	27	18	17	11	73	33
19th „	Benares	16	7	11	8	42	21
20th „	Campbellpore	8	14	8	5	35	16
21st „	Umballa	3	5	4	8	20	17
Military Train	Aldershot	29	32	35	35	131	74
„	Woolwich	14	9	28	18	69	35
Cavalry Depôt	Canterbury	56	51	72	79	258	146
		520	441	692	696	2,349	1,404
1st Batt. Gren. Guards	Dublin	27	14	14	17	72	29
2nd „ „ „	Windsor and London	19	16	19	15	69	38
3rd „ „ „	London and Windsor	17	10	16	20	63	25
1st Batt. Cold. „	London	14	10	12	17	53	27
2nd „ „ „	London	33	29	15	13	90	49
1st Batt. S. Fus. „	London	33	20	13	23	89	35
2nd „ „ „	London	24	19	11	21	75	40
	Victoria Lodging House	—	—	20	39	59	47
		167	118	120	165	570	290

Regiment.	Station.	Under Schoolmaster.		Under Schoolmistress.		Total.	Attending Industrial School.
		Boys.	Girls.	Boys.	Girls.		
1 Bat. 1st Foot	Cannanore	15	18	9	16	58	22
2/1st "	Nusseerabad	7	5	11	22	45	21
1/2nd Foot	Poona	15	13	17	15	60	39
2/2nd "	Aldershot and Gosport	6	5	11	11	33	18
1/3rd "	Dugshaie	8	6	25	27	66	29
2/3rd "	Aldershot	12	16	25	20	73	36
1/4th "	Dover	35	14	26	19	94	49
2/4th "	Dublin and Chester	13	17	16	18	64	33
1/5th "	Ferozepore	23	7	19	18	67	43
2/5th "	Aldershot and Glasgow	24	18	26	16	84	40
1/6th "	Rawul Pindee	7	4	10	13	34	24
2/6th "	Aldershot, &c.	23	20	20	26	89	52
1/7th "	Saugor	14	7	7	16	44	30
2/7th "	Bury and Aldershot	18	9	21	30	78	54
1/8th "	Poona	6	5	15	25	51	43
2/8th "	Aldershot and Bury	24	10	21	16	71	36
1/9th "	King William's Town	23	15	23	18	79	42
2/9th "	Dublin and Warley	11	16	15	14	56	38
1/10th "	Japan	13	12	13	25	63	40
2/10th "	Secunderabad	16	21	32	42	111	95
1/11th "	Fyzabad	17	21	29	19	86	63
2/11th "	Cape of Good Hope	10	15	14	21	60	49
1/12th "	Aldershot and Carlisle	16	5	20	16	57	29
2/12th "	Jubbulpore	20	14	9	19	62	39
1/13th "	Gibraltar	14	7	31	19	71	35
2/13th "	Gosport and Aldershot	11	15	9	10	45	28
1/14th "	Cawnpore	11	7	20	14	52	41
2/14th "	Melbourne	32	22	10	17	81	50
1/15th "	Bermuda	35	24	18	18	95	51
2/15th "	Dublin	26	22	28	7	83	40
1/16th "	Halifax, N. S.	19	23	25	23	90	64
2/16th "	Dublin and Curragh	24	24	14	20	82	57
1/17th "	Newry and Dublin	18	20	28	22	88	50
2/17th "	Jersey	22	21	26	33	102	54
1/18th "	Curragh and Belfast	14	13	20	23	70	39
2/18th "	Auckland	27	28	18	11	84	50
1/19th "	Rawul Pindee	7	7	10	20	44	36
2/19th "	Bangalore	13	28	34	41	116	42
1/20th "	Bristol and Kilkenny	5	9	4	8	26	11
2/20th "	Natal	13	12	24	16	65	39
1/21st "	Kurrachee	9	8	6	13	36	24
2/21st "	Rangoon	25	15	14	25	79	53
1/22nd "	Fredericton, N. B., and Cork.	12	8	8	5	33	20
2/22nd "	Sheffield	25	24	22	28	99	57
1/23rd "	Bombay and Devonport	22	14	11	15	62	40
2/23rd "	Aldershot	13	8	19	11	51	31
1/24th "	Malta	8	5	8	10	31	17
2/24th "	Secunderabad	16	4	7	4	31	6
1/25th "	Aldershot and Portsmouth.	23	13	30	30	96	57
2/25th "	Bareilly	18	19	13	14	64	33
26th "	Calcutta	13	8	25	31	77	52
27th "	Chatham	18	17	10	17	62	39
28th "	Gibraltar	4	5	21	10	40	22
29th "	Canada	12	9	11	10	42	25
30th "	Waterford	13	9	15	25	62	42
31st "	Malta	5	7	8	7	27	21
32nd "	Fort Beaufort, &c.	11	9	17	26	63	48
33rd "	Portsmouth	26	16	14	16	72	40
34th "	Aldershot and Shorncliffe.	11	7	14	16	48	34
35th "	Aldershot and Bradford	12	14	20	23	69	51
36th "	Peshawur and Rawul Pindee.	7	1	8	5	21	—
37th "	Shahjehanpore	19	7	15	15	56	37
38th "	Peshawur	9	12	28	29	78	69
39th "	Cork	22	25	28	16	91	69
40th "	Carlisle and Mullingar	15	17	11	16	59	18
41st "	Subathoo	10	5	31	25	71	60

APP. VI.
No. 2.

Regiment.	Station.	Under Schoolmaster.		Under Schoolmistress.		Total.	Attending Industrial School.
		Boys.	Girls.	Boys.	Girls.		
42nd Foot	Edinburgh and Aldershot.	15	14	13	15	57	21
43rd "	Curragh and Dublin	12	11	23	27	73	52
44th "	Kilkenny	19	12	13	17	61	27
45th "	Madras	16	23	25	20	84	47
46th "	Portsmouth	8	4	10	15	37	23
47th "	Barbadoes and Curragh	25	15	11	26	77	46
48th "	Malta	6	8	10	12	36	30
49th "	Deesa	6	9	26	29	70	20
50th "	Sydney and Devonport	21	22	15	16	74	37
51st "	Portland	20	18	18	25	81	54
52nd "	Malta	7	3	8	8	26	11
53rd "	Quebec and Barbadoes	6	4	10	22	42	24
54th "	Belfast and Mullingar	20	16	12	13	61	26
55th "	Chukrata	34	13	20	27	94	59
56th "	Waterford and Dublin	16	10	21	13	60	35
57th "	Devonport	16	17	24	27	84	58
58th "	Allahabad	7	12	17	14	50	43
59th "	Poona	23	18	33	27	101	44
1/60th Rifles	Montreal and Ottawa	8	4	13	20	45	26
2/60th "	Seetapore	14	15	12	18	59	15
3/60th "	Bellary	11	14	17	19	61	32
4/60th "	St. John, N. B., and Aldershot.	17	7	18	24	66	46
61st Foot	Bermuda	10	6	25	29	70	32
62nd "	Lucknow	17	16	20	25	78	38
63rd "	Fermoy and Kinsale	16	13	19	22	70	39
64th "	Malta	20	14	17	26	77	54
65th "	Dublin and Fermoy	10	5	15	13	43	26
66th "	Curragh	21	17	33	40	111	64
67th "	Portsea and Aldershot	15	6	14	17	52	27
68th "	Manchester and Cork	20	15	20	21	85	53
69th "	Montreal and Quebec	8	9	11	11	39	17
70th "	Kinsale and Limerick	11	8	7	14	40	26
71st "	Gibraltar	7	3	8	9	27	20
72nd "	Limerick and Buttevant	8	6	13	11	38	28
73rd "	Ceylon	8	7	5	5	25	11
74th "	Gibraltar	15	8	13	9	45	27
75th "	Hong Kong	11	3	16	17	47	19
76th "	Thayetmyo	15	9	20	22	66	51
77th "	Agra	8	5	2	11	26	17
78th "	Halifax, N. S.	11	10	17	25	63	47
79th "	Roorkee	11	5	12	10	38	27
80th "	Fleetwood and Birr	7	8	7	9	31	16
81st "	Buttevant and Templemore.	11	11	10	9	41	26
82nd "	Aden	13	13	8	14	48	23
83rd "	Gibraltar	18	10	22	17	67	49
84th "	Jamaica	11	8	9	5	33	22
85th "	Mean Meer	10	5	15	10	40	30
86th "	Mauritius	4	7	13	9	33	27
87th "	Malta	17	7	29	33	86	54
88th "	Nowshera	7	9	9	3	28	12
89th "	Athlone and Fermoy	10	5	20	19	54	21
90th "	Kamptee and Edinburgh	10	11	5	4	30	15
91st "	Dover	14	12	5	12	43	26
92nd "	Jullundar	6	8	22	11	47	40
93rd "	Jhansie	14	10	18	21	63	34
94th "	Woolwich	10	15	14	7	46	32
95th "	Mhow	32	34	17	17	100	50
96th "	Dum Dum	22	9	18	16	65	20
97th "	Aldershot and Dover	5	5	8	7	25	15
98th "	Aldershot and Newcastle	14	14	13	9	50	25
99th "	Cape Town and Gosport	17	9	10	10	46	19
100th "	Glasgow and Manchester	17	14	14	15	60	16
101st "	Gosport	17	9	12	17	55	33
102nd "	Lucknow	34	31	25	19	109	50
103rd "	Morar	16	18	14	22	70	53
104th "	Peshawur	9	9	4	4	26	16
105th "	Meerut	25	24	24	22	95	36

Regiment.	Station.	Under Schoolmaster.		Under Schoolmistress.		Total.	Attending Industrial School.
		Boys.	Girls.	Boys.	Girls.		
106th Foot	Umballa	25	14	6	20	65	34
107th „	Hazareebagh	8	12	16	22	58	49
108th „	Belgaum	30	24	40	27	121	46
109th „	Mooltan	28	10	20	12	70	41
1st Bat. Rifle Brigade	Ottawa and Montreal	14	13	16	14	57	40
2nd „ „	Devonport and Aldershot	14	12	20	21	67	49
3rd „ „	Dinapore	22	8	21	14	65	13
4th „ „	Chester and Aldershot	10	3	15	15	43	19
		2,135	1,706	2,351	2,483	8,675	5,071
1st West India Regt.	Sierra Leone	8	7	6	9	30	22
2nd „ „	Barbadoes, &c.	5	5	3	3	16	8
3rd „ „	Jamaica	11	10	11	10	42	—
Ceylon Rifles	Ceylon	224	14	—	—	238	14
Cape Mounted Rifles	Cape of Good Hope	15	6	8	10	39	19
Canadian Rifles	Canada	128	109	127	143	507	332
Malta Fencibles	Malta	5	—	—	—	5	—
		396	151	155	175	877	395
1st Depôt Battalion	Chatham	29	21	33	43	126	81
2nd „ „	Chatham	38	24	39	55	156	89
3rd „ „	Pembroke	30	25	33	31	119	84
4th „ „	Colchester	33	23	32	42	130	72
5th „ „	Parkhurst	26	21	32	41	120	74
6th „ „	Shorncliffe	22	25	38	42	127	83
7th „ „	Winchester	38	30	40	33	141	57
8th „ „	Colchester	22	20	29	32	103	71
9th „ „	Preston	15	26	32	49	116	92
10th „ „	Shorncliffe	30	40	47	63	180	111
11th „ „	Aberdeen	26	25	47	56	154	104
		309	274	402	487	1,472	918
Commissariat Staff	Aldershot	27	22	20	19	88	47
Military Labourers	Barbadoes	—	4	10	9	23	22
Garrison	Bathhurst	1	1	—	—	2	—
Convalescent Depôt	Dargeeling	6	8	3	3	20	—
Musketry Depôt	Gravesend	—	—	13	19	32	19
School of Musketry	Hythe	11	10	20	16	57	—
Convalescent Depôt	Kussowlie	3	6	9	8	26	19
Dets. Dep. Battalion	Landguard Fort	5	2	3	4	14	—
Convalescent Depot	Murree	7	7	12	12	38	21
Royal Victoria Hosp.	Netley	35	22	35	25	117	64
Convalescent Depôt	Palaveram	60	43	28	25	156	95
„	Poonamalee	17	27	17	27	88	54
Royal Military Coll.	Sandhurst	28	30	33	28	119	82
Convalescent Depôt	Wellington	29	11	26	25	91	36
„ „	Vizagapatam	32	24	15	19	90	41
Brigade of Guards	Victoria Lodging House	—	—	20	39	59	47
		261	217	264	278	1,020	547
Royal Horse Artillery.							
A. Brigade	Meerut	11	8	16	11	46	19
B. „	Woolwich	88	89	52	64	293	190
C. „	Aldershot	30	20	51	41	142	97
D. „	Bangalore	29	11	29	30	99	41
E. „	Kirkee	20	16	16	20	72	37
F. „	Umballa	7	5	12	14	38	29
Depôt	Maidstone	24	40	19	21	104	43

APP. VI.
No. 2.

Regiment.	Station.	Under Schoolmaster.		Under Schoolmistress.		Total.	Attending Industrial School.
		Boys.	Girls.	Boys.	Girls.		
Royal Artillery.							
1st Brigade	Halifax, N. S.	15	20	24	19	78	27
2nd "	Mauritius, &c.	—	4	—	2	6	6
3rd "	Montreal and Quebec	23	16	23	26	88	64
4th "	Toronto and Dublin	28	23	37	27	115	64
5th "	St. Thomas's Mount (Madras).	54	45	30	53	182	127
6th "	Mhow	12	3	15	17	47	23
7th "	Woolwich	43	12	26	29	110	59
8th "	Lucknow	22	21	24	26	93	43
9th "	Dublin and Ahmedabad	16	15	28	24	83	40
10th "	Malta	42	26	33	33	134	49
11th "	Woolwich	28	12	19	20	79	39
12th "	Portsmouth	62	36	59	51	208	92
13th "	Plymouth	32	27	44	43	146	67
14th "	Ahmedabad and Woolwich.	11	5	10	8	34	23
15th "	Gibraltar	42	36	30	39	147	90
16th "	Barrackpore	17	13	13	20	63	44
17th "	Dover	35	31	34	39	139	78
18th "	Kurrachee, &c.	33	24	13	16	86	43
19th "	Peshawur, &c.	6	5	10	8	29	13
20th "	Kamptee, &c.	43	27	13	19	102	21
21st. "	Gosport	39	40	26	35	140	82
22nd "	Morar, &c.	14	16	14	24	68	50
23rd "	Secunderabad, &c.	16	17	24	21	78	17
24th "	Mean Meer, &c.	5	11	19	18	53	47
25th "	Allahabad, &c.	8	7	13	9	37	5
Detached Batteries of Brigades serving in	United Kingdom	183	161	247	285	876	393
	Colonies	61	62	61	66	250	144
	India	41	34	26	34	135	44
Depôt Brigade	Woolwich	133	103	61	54	351	210
Coast Brigade	Sheerness	38	29	34	28	129	74
School of Gunnery	Shoeburyness	47	40	60	60	207	114
	Woolwich Common	—	—	72	76	148	103
	Cambridge Cottages	—	—	58	76	134	96
		1,358	1,110	1,395	1,506	5,369	2,847
Royal Engineers.							
	Aldershot	30	12	33	21	96	44
	Chatham	41	50	49	69	209	168
	Gibraltar	13	9	15	24	61	47
	Malta	26	5	6	5	42	10
	Quebec	4	6	10	13	33	31
		114	82	113	132	441	300

Appendix VII.—No. 1.

App. VII. No. 1.

Table marking Degrees of Progress as shown by Examination Books in the Grown Children's Schools from Superintending Schoolmasters' and Assistant Inspectors' Reports in 1868.

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.
2nd Life Guards	38	—	10	28	—	39	—	24	15	—	41	—	15	25	1
Royal Horse Guards	30	3	17	10	—	30	3	18	8	1	30	3	22	5	—
1st Dragoon Guards	33	8	17	8	—	33	6	26	1	—	33	2	22	9	—
4th „	37	2	35	—	—	37	3	32	2	—	37	3	32	2	—
5th „	48	1	27	19	1	48	2	41	3	2	48	5	36	5	2
1st Dragoons	14	8	4	2	—	15	10	3	2	—	15	7	5	3	—
2nd „	18	3	15	—	—	18	4	14	—	—	18	4	14	—	—
3rd Hussars	25	—	11	14	—	25	2	21	2	—	25	—	10	15	—
4th „	3	1	2	—	—	3	—	3	—	—	3	—	3	—	—
7th „	5	—	5	—	—	5	—	5	—	—	5	—	5	—	—
8th „	11	—	10	1	—	11	—	11	—	—	11	1	6	4	—
10th „	31	—	21	11	—	31	2	29	—	—	31	1	20	10	—
12th Lancers	8	8	—	—	—	8	8	—	—	—	8	8	—	—	—
13th Hussars	7	—	7	—	—	7	4	2	1	—	7	5	2	—	—
14th „	18	11	7	—	—	19	13	6	—	—	19	12	7	—	—
15th „	10	—	9	1	—	13	—	10	3	—	13	—	10	3	—
17th Lancers	9	—	6	3	—	9	—	5	4	—	9	—	5	4	—
18th Hussars	31	4	27	—	—	31	5	23	3	—	31	5	24	2	—
19th „	8	—	3	5	—	8	—	6	2	—	8	—	3	5	—
20th „	19	1	14	4	—	19	1	15	3	—	19	1	13	5	—
Cavalry Depôt	45	12	28	5	—	72	11	43	18	—	72	3	38	29	2
Military Train—															
Woolwich	16	—	6	8	2	16	—	14	2	—	16	—	6	10	—
Grenadier Guards—															
1st Battalion	10	—	6	4	—	24	1	18	5	—	17	—	15	2	—
2nd „	47	3	27	17	—	47	1	37	9	—	47	1	34	12	—
3rd „	21	1	18	2	—	26	2	23	1	—	25	1	23	1	—
Coldstream Guards—															
1st Battalion	15	—	13	2	—	20	—	15	5	—	16	—	13	3	—
Scots Fusilier Guards—															
1st Battalion	13	—	8	2	—	16	1	5	10	—	14	1	4	9	—
2nd „	11	3	4	4	—	11	—	10	1	—	11	1	6	4	—
1st Foot, 1st Batt.	4	2	2	—	—	14	2	7	4	1	12	2	7	3	—
2nd „ 2nd „	11	2	4	5	—	11	4	6	1	—	11	—	9	2	—
3rd „ 1st „	10	—	4	5	1	10	—	4	6	—	10	—	4	6	—
4th „ 2nd „	10	—	10	—	—	10	—	9	1	—	10	—	9	1	—
5th „ 1st „	16	2	13	1	—	16	—	12	4	—	16	2	10	4	—
„ „ 2nd „	33	—	21	12	—	33	4	26	3	—	33	—	20	11	2
6th „ 2nd „	26	—	18	8	—	26	—	24	2	—	26	—	10	16	—
7th „ 1st „	7	2	4	1	—	7	2	4	1	—	7	—	7	—	—
8th „ 1st „	8	—	2	5	1	8	—	4	4	—	8	—	7	1	—
„ „ 2nd „	28	5	19	4	—	28	3	22	3	—	28	—	16	12	—
9th „ 2nd „	4	—	1	3	—	4	—	4	—	—	4	—	2	2	—
12th „ 1st „	33	2	27	4	—	38	2	34	2	—	38	1	27	10	—
„ „ 2nd „	10	1	7	2	—	10	—	7	2	1	10	—	4	6	—
13th „ 1st „	9	—	6	3	—	9	2	4	2	—	9	—	5	4	—
„ „ 2nd „	7	4	3	—	—	19	—	18	1	—	19	—	10	9	—
14th „ 1st „	2	—	2	—	—	2	—	1	1	—	2	—	—	2	—

APP. VII.
No. 1.

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.
15th Foot, 2nd Batt.	42	2	40	—	—	42	—	42	—	—	42	—	42	—	—
16th „ 1st „	24	17	7	—	—	24	15	9	—	—	24	15	9	—	—
17th „ 1st „	36	7	27	2	—	36	8	28	—	—	36	6	22	8	—
„ „ 2nd „	43	5	32	5	1	43	6	29	7	1	43	7	33	3	—
18th „ 1st „	16	3	5	8	—	16	2	13	1	—	16	4	4	8	—
19th „ 1st „	6	—	5	1	—	6	—	6	—	—	6	—	3	—	3
21st „ 1st „	21	1	10	8	2	21	4	14	3	—	21	2	8	8	3
24th „ 1st „	4	—	4	—	—	9	—	8	1	—	9	1	8	—	—
27th Foot	18	6	12	—	—	23	8	13	2	—	23	11	9	3	—
28th „	12	—	2	10	—	12	—	3	9	—	12	—	4	8	—
29th „	10	—	7	3	—	10	—	7	3	—	10	—	8	2	—
30th „	23	2	21	—	—	23	3	20	—	—	23	1	22	—	—
31st „	5	—	5	—	—	5	—	5	—	—	5	—	5	—	—
33rd „	26	13	10	3	—	33	14	17	2	—	33	13	17	3	—
34th „	15	—	9	6	—	15	2	11	2	—	15	2	5	8	—
35th „	8	6	2	—	—	16	7	9	—	—	16	9	7	—	—
36th „	12	3	7	2	—	12	3	9	—	—	12	—	11	1	—
38th „	20	1	11	8	—	20	2	16	2	—	20	1	2	16	1
39th „	17	7	6	4	—	17	8	8	1	—	17	7	8	2	—
40th „	27	9	12	6	—	27	11	13	3	—	27	11	14	2	—
41st „	6	—	6	—	—	6	1	5	—	—	6	1	5	—	—
42nd „	8	—	4	4	—	8	—	5	3	—	8	—	5	3	—
44th „	10	1	7	2	—	9	1	8	—	—	10	1	7	1	1
48th „	18	—	13	5	—	18	3	15	—	—	18	2	15	1	—
52nd „	18	—	13	5	—	18	1	14	3	—	18	—	12	6	—
53rd „	7	—	7	—	—	7	—	7	—	—	7	—	7	—	—
54th „	14	1	5	8	—	14	2	11	1	—	14	2	11	1	—
56th „	13	—	4	9	—	13	—	7	5	—	13	—	10	3	—
57th „	20	1	9	10	—	20	1	18	1	—	20	1	12	7	—
60th Rifles—															
1st Battalion	5	1	3	1	—	5	1	3	1	—	5	—	3	2	—
3rd „	13	—	7	5	1	13	—	11	1	1	13	—	4	9	—
4th „	17	2	12	3	—	17	2	12	3	—	17	2	14	1	—
62nd Foot	43	2	25	16	—	43	—	37	6	—	43	3	23	17	—
63rd „	38	3	13	22	—	38	9	27	2	—	38	2	22	14	—
64th „	30	15	15	—	—	35	15	18	2	—	35	7	22	6	—
65th „	17	9	3	2	1	17	2	15	—	—	17	3	11	3	—
66th „	2	—	2	—	—	4	—	4	—	—	4	—	4	—	—
69th „	15	2	7	6	—	15	2	12	1	—	15	2	13	—	—
71st „	7	—	1	6	—	7	—	3	4	—	7	—	3	4	—
72nd „	14	3	4	7	—	14	2	9	3	—	14	—	13	1	—
74th „	22	—	12	10	—	22	1	13	8	—	22	—	7	11	4
77th „	3	—	3	—	—	3	—	3	—	—	3	—	3	—	—
78th „	19	6	13	—	—	19	6	13	—	—	19	—	19	—	—
79th „	3	—	3	—	—	3	—	3	—	—	3	—	3	—	—
80th „	10	—	9	1	—	10	—	9	1	—	10	—	6	4	—
81st „	20	—	16	4	—	20	—	18	2	—	20	—	16	4	—
83rd „	20	—	9	11	—	20	—	9	11	—	20	—	9	9	2
87th „	30	8	20	2	—	30	8	20	2	—	30	4	17	9	—
88th „	31	2	24	5	—	31	1	28	2	—	31	—	9	22	—
89th „	23	3	15	5	—	23	4	19	—	—	23	4	18	1	—
90th „	16	1	13	2	—	16	—	12	4	—	16	—	11	5	—
93rd „	6	—	6	—	—	6	1	5	—	—	6	—	6	—	—
94th „	17	5	11	1	—	25	7	18	—	—	26	7	19	—	—
97th „	14	2	11	1	—	14	2	12	—	—	14	—	12	2	—
98th „	46	1	20	25	—	46	1	42	3	—	46	1	29	16	—
100th „	17	6	11	—	—	17	7	10	—	—	17	7	10	—	—
104th „	25	9	15	1	—	25	8	16	1	—	25	—	23	2	—
Rifle Brigade—															
1st Battalion	7	—	2	4	1	7	—	2	5	—	7	—	2	2	3
2nd „	17	1	13	2	1	21	—	17	4	—	21	1	14	6	—
Royal Canadian Rifles—															
Kingston	88	24	60	4	—	88	23	61	4	—	88	18	65	4	1
Navy Cottages	35	1	34	—	—	35	1	34	—	—	35	—	35	—	—
Isle aux Noix	27	—	6	20	1	27	—	16	10	1	27	—	6	10	11
St. John's	55	5	48	2	—	55	12	41	2	—	55	—	52	3	—

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone Back.
1st Depôt Battalion	25	4	10	10	1	29	4	16	9	—	29	2	15	12	—
2nd „	23	7	9	7	—	23	5	14	4	—	24	5	9	10	—
3rd „	23	—	10	12	1	23	—	12	9	2	23	—	7	16	—
4th „	37	1	17	19	—	39	3	23	13	—	41	—	13	27	1
5th „	44	13	22	9	—	51	17	24	10	—	51	12	23	16	—
6th „	15	2	10	3	—	24	2	16	6	—	24	1	10	13	—
7th „	44	18	20	6	—	47	13	28	6	—	47	2	24	21	—
8th „	31	10	16	5	—	32	7	19	6	—	32	—	22	10	—
10th „	54	12	31	11	—	62	13	43	6	—	62	—	40	20	2
11th „	43	3	25	15	—	43	1	26	16	—	43	—	17	26	—
12th „	20	2	15	3	—	21	2	18	1	—	21	4	17	—	—
Commissariat Staff Corps, Aldershot	42	8	32	2	—	42	13	29	—	—	42	6	32	4	—
Royal Victoria Hospital, Netley	40	15	22	3	—	45	14	29	2	—	45	18	23	4	—
Sandhurst	56	8	28	20	—	61	12	38	11	—	61	2	29	30	—
Royal Malta Fencible Artillery	4	—	—	4	—	4	—	—	4	—	4	—	—	4	—
Convalescent Depôt, Kussowlie	11	1	8	2	—	11	1	9	1	—	11	—	9	2	—
Royal Horse Artillery—															
Aldershot	55	11	28	16	—	55	5	49	1	—	55	5	34	16	—
Maidstone	30	—	17	13	—	36	1	27	8	—	35	1	20	14	—
Woolwich { Boys	97	11	58	28	—	97	2	81	14	—	97	7	76	14	—
Woolwich { Girls	74	9	43	20	2	74	—	54	17	3	74	7	50	16	1
Royal Artillery—															
6th Brigade	38	18	17	3	—	49	12	34	3	—	49	15	24	10	—
7th „	41	—	40	—	1	41	—	40	1	—	41	—	34	5	2
10th „	32	—	29	3	—	32	—	28	4	—	32	—	29	3	—
11th „	2	—	2	—	—	2	—	2	—	—	2	—	2	—	—
12th „	11	3	4	4	—	16	4	10	2	—	16	3	9	4	—
Ditto „	20	3	9	8	—	33	6	23	4	—	33	4	23	6	—
13th „	31	14	15	2	—	41	11	27	3	—	41	6	34	1	—
Ditto „	38	13	17	8	—	42	11	28	3	—	42	8	33	1	—
15th „	35	—	8	26	1	35	—	11	23	1	35	2	21	12	—
17th „	16	—	11	5	—	40	—	34	6	—	16	—	15	1	—
20th „	31	—	29	2	—	31	—	28	3	—	31	—	29	2	—
Depôt Brigade—															
Sheerness { Boys	25	—	13	12	—	30	2	22	6	—	31	1	11	18	1
Sheerness { Girls	14	—	2	12	—	14	—	6	8	—	14	1	3	10	—
Warley	34	3	14	15	2	34	3	25	5	1	33	4	15	14	—
Woolwich { Boys	109	6	78	16	9	109	—	102	5	2	109	11	88	9	1
Woolwich { Girls	66	10	41	9	6	65	1	46	16	3	66	—	51	14	1
Detached Batteries—															
Dublin	32	9	20	3	—	39	11	25	2	1	39	10	26	3	—
„	9	5	3	—	1	11	7	4	—	—	11	5	4	2	—
Hilsea	13	—	5	8	—	24	—	20	4	—	25	—	14	11	—
Kamptee	31	—	29	2	—	31	—	28	3	—	31	—	29	2	—
Kingston	29	1	28	—	—	29	3	26	—	—	29	—	29	—	—
Leith Fort	23	1	7	15	—	23	—	18	4	1	23	—	15	5	3
Limerick	13	—	6	7	—	13	—	6	7	—	13	—	6	7	—
London, C.W.	9	—	4	5	—	9	—	9	—	—	9	—	9	—	—
Mean Meer	8	4	3	1	—	8	2	6	—	—	8	—	5	3	—
Meerut	4	—	4	—	—	4	—	4	—	—	4	—	3	1	—
Montreal	37	1	33	3	—	37	1	32	4	—	37	2	35	—	—
Peshawur	2	—	2	—	—	2	—	2	—	—	2	—	2	—	—
Quebec	18	—	13	5	—	18	—	12	6	—	18	—	12	6	—
St. Helen's Island	9	—	9	—	—	9	—	9	—	—	9	—	9	—	—
Toronto	36	9	27	—	—	36	8	28	—	—	36	6	30	—	—
Umballa	4	2	2	—	—	4	2	2	—	—	4	3	1	—	—
Royal Engineers—															
Aldershot	35	4	25	6	—	35	—	32	3	—	35	12	21	1	1
Chambly	36	13	23	—	—	36	14	22	—	—	36	11	25	—	—
Gibraltar	20	—	5	12	3	19	—	13	6	—	19	—	4	13	2

APP. VII. No. 2.

APPENDIX VII.—No. 2.

TABLE marking Degrees of Progress as shown by Examination Books in Grown Children's Schools, from Superintending Schoolmasters' and Assistant Inspectors' Reports, 1869.

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.
1st Life Guards	20	1	17	2	—	20	1	16	3	—	20	—	17	3	—
2nd „	35	1	34	—	—	37	—	37	—	—	33	—	26	4	3
Royal Horse Guards	22	1	19	2	—	22	1	18	3	—	22	—	15	7	—
1st Dragoon Guards	26	4	10	11	1	26	3	22	1	—	26	10	14	2	—
4th „	18	—	9	9	—	18	1	12	5	—	20	—	7	13	—
5th „	35	4	18	13	—	35	9	25	1	—	35	2	22	9	2
6th „	42	12	30	—	—	42	9	33	—	—	42	10	31	1	—
7th „	12	—	11	1	—	12	—	12	—	—	12	—	10	2	—
1st Dragoons	18	3	10	5	—	18	6	11	1	—	18	3	11	4	—
2nd „	38	7	26	5	—	38	8	28	2	—	38	8	29	1	—
5th Lancers	15	—	14	1	—	15	1	13	1	—	15	—	9	6	—
6th Dragoons	15	3	9	3	—	15	2	12	1	—	15	2	11	—	2
8th Hussars	10	2	7	1	—	10	3	6	1	—	10	3	7	—	—
9th Lancers	14	3	7	4	—	14	4	6	4	—	13	3	8	2	—
12th „	14	5	9	—	—	14	7	7	—	—	14	5	9	—	—
13th Hussars	7	6	1	—	—	7	6	1	—	—	7	6	1	—	—
14th „	25	1	22	2	—	25	7	18	—	—	25	3	21	1	—
17th Lancers	16	3	11	2	—	16	3	9	4	—	15	—	10	5	—
18th Hussars	27	1	14	10	2	33	5	24	4	—	33	8	16	9	—
19th „	8	3	1	4	—	8	3	2	3	—	8	1	5	2	—
Cavalry Depôt	67	2	49	16	—	106	2	89	15	—	106	—	75	31	—
Military Train—															
Aldershot	51	1	24	25	1	51	1	46	4	—	51	4	35	12	—
Grenadier Guards—															
1st Battalion	17	2	14	1	—	39	2	20	16	1	39	1	16	22	—
2nd „	20	—	19	1	—	33	—	33	—	—	31	—	30	1	—
3rd „	22	—	22	—	—	23	—	19	4	—	20	—	16	4	—
Coldstream Guards—															
1st Battalion	13	1	12	—	—	14	1	13	—	—	13	—	12	1	—
2nd „	27	—	24	3	—	50	—	38	12	—	42	—	26	16	—
Scots Fusilier Guards—															
1st Battalion	28	—	26	2	—	28	1	24	3	—	28	1	21	6	—
2nd „	15	3	10	2	—	20	4	14	2	—	15	3	10	2	—
2nd Foot, 2nd Batt.	6	2	4	—	—	9	4	5	—	—	9	—	9	—	—
3rd „ 2nd „	28	—	19	9	—	28	—	27	1	—	28	—	12	13	3
4th „ 1st „	19	4	10	5	—	24	4	17	3	—	24	2	18	4	—
„ „ 2nd „	10	—	7	3	—	10	—	7	3	—	10	—	3	7	—
5th „ 2nd „	28	3	16	9	—	28	5	21	2	—	28	5	21	2	—
6th „ 2nd „	12	—	10	2	—	15	—	13	2	—	15	—	14	1	—
7th „ 2nd „	25	1	10	14	—	25	—	25	—	—	25	1	16	8	—
10th „ 2nd „	18	2	9	5	2	18	5	11	2	—	18	4	11	3	—
11th „ 1st „	36	—	34	2	—	36	—	21	15	—	36	—	17	19	—
12th „ 1st „	23	4	13	6	—	23	4	19	—	—	23	2	14	7	—
13th „ 1st „	14	—	7	7	—	14	—	11	3	—	14	—	13	1	—
„ „ 2nd „	22	2	8	12	—	22	—	22	—	—	22	—	17	4	—
15th „ 2nd „	35	17	17	1	—	38	12	26	—	—	37	8	29	—	—
17th „ 1st „	25	4	17	3	1	25	7	17	1	—	25	7	15	1	2
18th „ 1st „	24	7	12	5	—	24	2	22	—	—	24	4	19	1	—
20th „ 1st „	7	2	3	2	—	7	2	4	1	—	7	—	7	—	—

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.
22nd Foot, 1st Batt.	19	2	13	4	—	19	5	12	2	—	19	1	16	2	—
23rd „ 2nd „	16	4	7	5	—	16	1	15	—	—	16	—	15	1	—
24th „ 1st „	4	3	1	—	—	12	4	8	—	—	12	5	7	—	—
„ „ 2nd „	13	3	7	3	—	18	3	14	1	—	14	1	11	2	—
27th Foot	24	8	14	2	—	31	7	24	—	—	31	8	20	3	—
28th „	7	—	4	3	—	12	—	8	4	—	12	—	8	0	4
29th „	24	2	13	9	—	24	2	12	10	—	24	4	11	9	—
30th „	8	2	6	—	—	8	3	5	—	—	8	3	5	—	—
31st „	10	—	9	1	—	10	—	9	1	—	10	—	9	1	—
32nd „	8	—	5	3	—	12	—	9	3	—	8	—	5	3	—
33rd „	28	6	20	2	—	30	7	22	1	—	30	8	15	7	—
34th „	11	3	7	1	—	11	—	9	2	—	11	1	9	1	—
35th „	25	—	18	6	1	25	—	20	5	—	25	—	14	8	3
37th „	8	2	6	—	—	8	2	6	—	—	8	1	6	1	—
42nd „	9	2	7	—	—	9	1	8	—	—	9	—	9	—	—
43rd „	13	1	5	5	2	13	—	12	1	—	13	—	6	6	1
45th „	37	1	14	20	2	37	1	30	5	1	37	2	23	11	1
48th „	13	4	4	5	—	13	1	11	1	—	13	2	10	1	—
52nd „	9	1	1	7	—	9	1	6	2	—	9	1	5	3	—
53rd „	12	—	12	—	—	12	—	12	—	—	12	—	12	—	—
54th „	19	1	13	5	—	19	4	12	3	—	19	3	11	5	—
55th „	16	—	9	7	—	16	—	5	8	3	16	—	3	13	—
56th „	20	3	17	—	—	30	2	27	1	—	31	3	27	1	—
57th „	26	1	23	1	1	26	1	24	1	—	26	—	17	9	—
60th Rifles, 1st Batt.	9	2	7	—	—	9	2	7	—	—	9	1	8	—	—
„ 2nd „	15	—	8	7	—	15	—	13	2	—	15	—	2	13	—
„ 3rd „	21	3	15	3	—	21	4	17	—	—	21	—	21	—	—
„ 4th „	16	3	4	9	—	16	4	10	2	—	16	—	8	6	2
62nd Foot	20	—	8	11	1	20	—	11	9	—	20	—	5	14	1
63rd „	16	1	14	1	—	16	2	14	—	—	16	1	15	—	—
64th „	33	24	8	1	—	36	20	14	2	—	36	10	24	2	—
65th „	14	—	12	2	—	14	—	13	1	—	14	1	11	2	—
66th „	31	3	11	17	—	31	1	27	3	—	31	2	24	5	—
67th „	11	1	5	5	—	11	—	11	—	—	11	—	7	3	1
68th „	22	1	13	8	—	22	—	22	—	—	22	1	19	2	—
69th „	14	2	12	—	—	14	3	11	—	—	14	—	14	—	—
70th „	28	—	18	10	—	28	—	23	5	—	28	1	19	6	2
71st „	6	—	—	6	—	6	—	6	—	—	6	—	4	1	1
72nd „	6	1	3	2	—	6	1	3	2	—	6	—	5	1	—
74th „	15	1	14	—	—	25	4	21	—	—	24	6	19	—	—
78th „	17	4	13	—	—	17	3	14	—	—	17	2	15	—	—
81st „	23	3	20	—	—	23	4	18	1	—	23	1	20	2	—
83rd „	20	—	10	10	—	20	—	11	9	—	20	—	12	7	1
87th „	4	3	1	—	—	4	3	1	—	—	4	3	1	—	—
89th „	7	1	4	2	—	7	1	6	—	—	7	—	7	—	—
91st „	14	—	8	6	—	23	—	18	5	—	23	—	11	12	—
97th „	7	1	5	1	—	7	—	4	3	—	7	—	5	2	—
99th „	2	1	1	—	—	6	2	4	—	—	5	—	4	1	—
100th „	17	1	7	9	—	17	—	9	8	—	17	—	2	10	5
101st „	19	5	11	3	—	24	3	20	1	—	24	4	15	5	—
102nd „	15	—	15	—	—	15	—	12	3	—	15	—	13	2	—
107th „	12	—	12	—	—	12	—	1	11	—	12	1	9	2	—
Rifle Brigade—															
1st Battalion	22	5	11	6	—	22	11	7	4	—	22	2	16	4	—
2nd „	26	—	19	6	1	37	3	25	9	—	37	2	26	9	—
4th „	14	—	4	9	1	14	3	9	2	—	14	2	9	3	—
Royal Canadian Rifle Regiment	191	11	162	18	—	191	13	173	5	—	191	3	152	36	—
3rd Depôt Battalion	40	3	21	15	1	48	2	24	22	—	48	1	27	19	1
5th „	34	6	21	7	—	53	4	54	4	—	53	6	33	13	—
7th „	34	8	16	8	2	53	11	30	12	—	52	4	14	33	1
Commissariat Staff Corps—Aldeshot.	53	8	27	18	—	53	11	34	8	—	53	5	33	15	—
Netley Haspitalr	44	15	24	5	—	55	15	35	5	—	55	12	37	6	—

APP. VII.
No. 2.

Regiments.	Dictation.					Writing.					Arithmetic.				
	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.	No. of Books examined.	Great Progress.	Progress.	Stationary.	Gone back.
Convalescent Depôt, Chunar - - -	20	1	17	2	—	20	1	15	4	—	20	1	9	10	—
Royal Horse Artillery—															
A. Brigade - -	10	—	10	—	—	10	—	10	—	—	10	—	8	2	—
B. „ - -	142	10	103	18	11	142	7	120	8	7	142	7	103	21	11
D. „ - -	27	2	10	12	3	27	1	10	14	2	27	—	7	14	6
Royal Artillery—															
3rd Brigade -	84	14	70	—	—	84	12	52	—	—	84	10	74	—	—
5th „ -	94	5	63	24	2	94	9	75	9	1	94	7	69	17	1
8th „ -	19	1	12	6	—	19	1	17	1	—	19	1	12	6	—
10th „ -	31	9	21	1	—	38	10	26	2	—	38	11	27	—	—
11th „ -	21	1	17	3	—	21	—	20	1	—	21	2	15	4	—
13th „ -	40	5	27	8	—	46	3	34	9	—	45	5	36	4	—
15th „ -	30	—	15	15	—	30	1	15	14	—	30	2	21	6	1
16th „ -	4	—	4	—	—	4	—	4	—	—	4	—	1	3	—
17th „ -	40	10	23	7	—	64	8	51	5	—	64	3	51	10	—
21st „ -	23	1	14	8	—	30	2	17	11	—	28	5	13	10	—
Detached Batteries—															
Aldershot - -	49	2	20	25	2	49	1	40	7	1	49	1	30	14	4
Bareilly - -	13	—	12	1	—	13	—	9	4	—	13	—	8	5	—
Bellary - -	18	—	7	9	2	18	—	11	7	—	18	2	9	7	—
Delhi - - -	1	—	1	—	—	1	—	1	—	—	1	—	1	—	—
Devonport - -	2	—	2	—	—	6	—	6	—	—	6	—	6	—	—
Dublin - - -	36	17	18	1	—	44	18	23	3	—	44	13	30	1	—
Hochelaga - -	11	—	11	—	—	11	—	11	—	—	11	—	11	—	—
Leith Fort - -	23	—	7	16	—	23	—	20	3	—	23	—	19	4	—
London, C.W. -	10	3	5	2	—	10	2	6	2	—	10	4	4	2	—
Shoeburyness -	44	4	21	19	—	49	15	27	7	—	49	8	20	20	1
Toronto - -	28	15	13	—	—	38	17	21	—	—	38	15	22	1	—
Trimulgherry -	16	—	10	5	1	16	3	8	5	—	16	1	6	9	—
Royal Engineers—															
Aldershot - -	42	11	30	1	—	42	10	31	1	—	42	11	30	1	—
Chatham - -	40	3	29	8	—	40	4	30	6	—	40	1	14	25	—
Gibraltar - -	19	—	7	12	—	19	—	14	5	—	19	—	13	6	—
Malta - - -	12	8	3	1	—	31	22	5	4	—	12	8	4	—	—

Appendix VIII.—No. 1.

Examination of Students of the 1st Division, Normal School, Royal Military Asylum, in June 1868.

Order of Merit.	Name.	Index Number.	Arithmetic.	Algebra.	Euclid.	Logarithms and Trigonometry.	Mechanics.	Total.	Scripture History.	English Grammar.	Geography.	History.		Penmanship.	Reading.	Chemistry.	Drawing.	Fortification.	Vocal Music.	Total.	Remarks.
												English.	Indian and Colonial.								
	Maximum -	—	110	80	80	80	80	430	110	100	110	130	60	75	100	150	80	75	80	1500	
	Minimum -	—																		750	
1	Gilmore, John -	12	110	80	79	62	62	393	99	80	90	100	50	60	72	120	70	75	70	1279	Pupil Teacher, R. H. M. School.
2	Sproat, Chas. S.	20	101	75	76	55	59	366	97	70	85	100	45	50	60	95	55	54	75	1152	Private 6th Dragoon Guards.
3	Murray, And. W.	13	98	73	50	47	52	320	88	75	80	110	50	40	85	100	50	70	70	1138	Bombardier, Royal Artillery.
4	Lynch, Thos. -	19	97	80	76	72	46	371	69	85	75	95	40	55	60	90	68	65	53	1126	Assistant master, R.H.M. School.
5	Mulvihill, Patk.	11	97	70	75	51	67	360	102	70	70	90	40	30	50	110	47	62	65	1096	Lance corpl., 1/19th Foot.
6	McLachlan, W.	17	93	80	71	37	59	340	87	55	70	90	35	40	57	115	69	59	68	1085	Private, Scots Fusileer Guards.
7	McEnroe, C. -	15	76	72	67	46	41	302	62	70	50	85	40	50	45	95	53	37	70	959	Civilian.
8	Browne, Jas. A.	16	81	80	42	34	35	272	86	65	60	60	25	30	80	50	78	45	75	926	Civilian.
9	Splane, John -	14	97	66	64	46	28	301	80	50	60	45	30	45	55	55	60	54	40	875	Private, 2/20th Foot.
10	Carr, Mathew -	18	92	70	43	22	49	276	59	50	0	60	20	35	67	85	40	44	68	804	Corporal, 94th Foot.

Appendix VIII.—No. 1.

Examination of Students of the 1st Division, Normal School, Royal Military Asylum, in December 1868.

Order of Merit.	Name.	Index Number.	Arithmetic.	Algebra.	Euclid.	Logarithms and Trigonometry.	Mechanics.	Total.	Scripture History.	English Grammar.	Geography.	History.		Penmanship.	Reading.	Chemistry.	Drawing.	Fortification.	Vocal Music.	Total.	Remarks.
												English.	Indian and Colonial.								
	Maximum -	—	110	80	80	80	80	430	110	100	110	130	60	75	100	150	80	75	80	1500	
	Minimum -	—																		750	
1	Thompson, Geo.	12	100	68	56	36	51	311	87	60	106	108	53	75	80	105	50	65	70	1170	Private, 70th Foot.
2	Irwin, Wm. -	14	99	76	70	74	71	390	83	88	102	66	29	70	65	85	45	58	80	1161	Civilian.
3	Lonsdale, Josh.	13	95	72	55	58	53	333	84	90	82	96	49	75	75	110	50	59	30	1133	Corporal, 75th Foot.
4	Jupp, Wm. H.	16	94	42	54	57	55	302	93	34	98	84	37	70	45	90	80	68	70	1066	Pupil Teacher, Royal Military Asylum.
5	Carr, Mathew -	17	92	68	74	42	55	331	76	64	87	60	20	65	60	90	40	64	70	1032	Corporal, 94th Foot.
6	Browne, Fk. W.	15	78	42	43	47	48	258	87	56	110	90	43	70	35	75	60	43	70	997	Pupil Teacher, Royal Hibern. Mil. Schl.

Appendix VIII.—No. 1.

Examination of Students of the 1st Division, Normal School, Royal Military Asylum, in June 1869.

Order of Merit.	Name.	Index Number.	Arithmetic.	Algebra.	Euclid.	Logarithms and Trigonometry.	Mechanics.	Total.	Scripture History.	English Grammar.	Geography.	History.		Penmanship.	Reading.	Chemistry.	Drawing.	Fortification.	Vocal Music.	Total.	Remarks.
												English.	Indian and Colonial.								
	Maximum -	—	110	80	80	80	80	430	110	100	110	130	60	75	100	150	80	75	80	1500	
	Minimum -	—																		750	
1	Gyde, Wm. -	11	110	72	66	56	70	374	71	90	100	110	40	50	90	80	60	72	80	1217	Sergeant, 31st Foot.
2	Palmer, George	12	95	62	52	60	70	339	77	80	80	80	20	50	80	90	65	59	75	1095	Private, 31st Foot.
3	Turner, A. M. -	15	100	39	29	27	40	235	93	60	70	90	40	60	75	120	55	43	58	999	Bombardier, Royal Artillery.
4	Prior, John -	14	74	25	40	48	48	235	110	70	70	80	30	45	65	105	50	54	60	974	Private, 1/13th Foot.
5	Gilbert, Edwin -	13	85	25	22	22	36	190	91	70	90	90	30	60	75	70	57	41	80	944	Private, 31st Foot.
6	Langston, John	16	61	14	26	6	12	119	96	60	60	90	30	45	65	65	60	10	55	755	Corporal, Grenadier Guards,

Appendix VIII.—No. 1.

Examination of Students of the 1st Division, Normal School, Royal Military Asylum, in December 1869.

Order of Merit.	Name.	Index Number.	Arithmetic.	Algebra.	Euclid.	Logarithms and Trigonometry.	Mechanics.	Total.	Scripture History.	English Grammar.	Geography.	History.		Penmanship.	Reading.	Chemistry.	Drawing.	Fortification.	Vocal Music.	Total.	Remarks.
												English.	Indian and Colonial.								
	Maximum -	—	110	80	80	80	80	430	110	100	110	130	60	75	100	150	80	75	80	1500	
	Minimum -	—																		750	
1	Blount, Wm. F.	13	108	69	79	62	67	385	96	90	93	118	45	35	80	100	45	72	80	1239	Corp., 2/15th Foot.
2	Bird, Henry -	12	83	61	59	49	25	277	88	60	82	97	28	50	70	80	35	53	70	990	Civilian.
3	Wheeler, Rayd.	11	81	18	56	29	37	221	80	80	56	91	15	60	40	110	50	71	60	934	Lance Corp., 2nd Bat. Coldstream Guards.

Appendix VIII.—No. 2.

Report on the Schools of the Royal Military Asylum, Chelsea, by the Rev. Canon Moseley.

Two members of the Council have examined the school every half year. Of these I have had the honour to be one. The following table shows the number of boys present at each of our last three examinations, and the number in the hospital :—

	1868.	1869.	
	Christmas.	Midsummer.	Christmas.
Present - - -	445	429	428
In the hospital - -	31	39	34
Total - -	476	478	462

The students of the Normal School complete their course of study by practising the art of teaching in the Royal Military Asylum School under the direction of Mr. McLeod, the head master of that school; and the work of our inspection has been accustomed to begin with an inquiry into the efficiency of this part of their training.

With this view each student has been required to give two prepared lessons to a class of boys of the school, at which we have been present, and of which we have taken notes; one of these has always been a Bible lesson, and the other a lesson on some branch of popular science intended as a specimen of the kind of lecture that a regimental schoolmaster should be able to give to the soldiers of his regiment. Such lectures, forming part of the system of the reading rooms and libraries, have been introduced in the army with success under the direction of Mr. McLeod.

Besides these prepared lessons each student has been required to give an unprepared lesson in the ordinary course of the instruction of the school on some subject selected by ourselves.

From these lessons, and after consultation with Mr. McLeod, we have been accustomed to decide on the class of the certificate to be awarded to each student, and enabled to assign schoolmasters to different regiments with some reference to the conditions under which they would have to exercise their functions.

The following are the subjects in which these prepared lessons were given at one of our examinations :—

Subjects of Scripture Lessons.

Gehazi's Sin, and its Punishment.
Murder of Abel.
Our Lord in the Temple at 12 years of age.
David the Conqueror before Saul the King.
Return of the Holy Family from Egypt.
Elisha and the Children.
Elijah and the Prophets of Baal.
Esau selling his Birthright.
The Call of Samuel.

App. VIII.
No. 2.

Subjects of Scientific Lessons.

Subject of Lectures.

Hydrogen.
Carbonic Gas.
Chemical Affinity.
Iron, as illustrating chemical changes.
Chlorine.
Water.
Ammonia.
Flame.
Oxygen.

The lessons in popular science are prepared under the special direction of Mr. Reynolds, the principal of the Normal School; whilst in all other subjects the teaching of the students to teach, is entrusted to Mr. M'Leod, who ranks among the first elementary teachers of the time. It is scarcely possible to speak too highly of the great ability and industry which Mr. Reynolds has brought to his work. It has been his object to devise instructive experiments in physical science which may be performed with precision by the aid of apparatus of an inexpensive kind, such as schoolmasters may construct with their own hands. In this he has been eminently successful, and nothing could be more interesting than the scientific lectures of the students at which we have been accustomed to be present, or more striking than the experiments by which they were illustrated.

Besides these lectures on popular science the students are specially instructed by Mr. McLeod to deliver lectures on other subjects illustrated by the magic lantern, and they are taught the *use* of that lantern. Such lanterns with various sets of slides have been provided at the expense of the War Office, and placed under the care of Mr. McLeod, and he circulates them regularly from regiment to regiment, not only at home but on foreign service.

These prepared lessons of the students occupied each about twenty minutes, and the hearing of them usually took us two days. We then proceeded to examine the boys of the school. We heard every boy in the school read. We took a specimen of the writing from dictation on paper of every boy in the first three of the five schools into which the whole school is divided; and we set two sums to every boy, recording how many boys in each class could work these sums correctly.

I have before me these specimens of writing from dictation for four successive examinations, beginning at Midsummer 1868.

The following was the sentence dictated to the 1st class at Midsummer 1869:—

"It is in Egypt that this phenomenon is most generally observed. The uniformity of the extensive sandy plains of Lower Egypt is interrupted by only small eminences, on which the villages are situated in order to escape the inundations of the Nile."

Twenty boys wrote it without any mistake in spelling; 8 made one mistake; and 2 made two mistakes.

The sentence given to the 2nd class of the first school was—

"The aspect of the river and the adjacent coasts was wild and dangerous. The mouth of the Columbia is upwards of four miles wide, with a peninsula and promontory on one side and a long low spit of land on the other, between which a sand-bar and chain of breakers almost block."

Twenty-two boys wrote it without any mistake; 2 with only one mistake; and 2 with two mistakes.

The same sentence was dictated to the 3rd class of the first school: 21 of them made no mistake; 4 made one; and 2 made two.

I do not consider the penmanship in these exercises in dictation good. It is not so good as I have seen it at former examinations, or scarcely so good as those of the boys of the school below.

The sums we set them to work are stated in the following table, together with the numbers worked correctly:—

1st Class, 1st Division, 1st School.

Arithmetic.

Ques. 1. What will be the expense of paving an area which measures 35 ft. 10 in. by 18 ft. 6 in., at 6*s.* 3*d.* per yard?

Ques. 2. A tank is 30 ft. 9 in. long, 16 ft. 7 in. wide, and 6 ft. 4 in. deep. Find how much water it will hold in cubic feet and inches?

—	No. in Class.	No. right.	No. wrong.	Answers.
				£ *s.* *d.*
Ques. 1 -	16	15	1	23 0 $4\frac{11}{16}$
Ques. 2 -	16	16	0	3,229 cub. ft., 1,044 cub. in.

1st Class, 2nd Division, 1st School.

Arithmetic.

Ques. 1. Find the area of the floor of a room 14 ft. 8 in. by 12 ft. 9 in., and the cost of carpeting it, at 1*s.* 4*d.* a square foot?

Ques. 2. In what time will 229*l.* 10*s.* amount to 258*l.* 3*s.* 9*d.*, at 5 per cent. per annum?

—	No. examined.	No. right.	No. wrong.	Answers.
				£ *s.* *d.*
Ques. 1 -	14	14	0	187 sq. ft. - 12 9 4
Ques. 2 -	14	13	1	$2\frac{1}{2}$ years.

2nd Class, 1st School.

Arithmetic.

Ques. 1. Add the sum and difference of $\frac{4}{5}$ of 3 guineas and $\frac{2}{3}$ of 4*l.*?

Ques. 2. Amount 2,000*l.* for $12\frac{1}{4}$ years, at $3\frac{1}{2}$ per cent.?

—	No. in Class.	No. right.	No. wrong.	Answers.
				£ *s.* *d.*
Ques. 1 -	26	23	3	5 6 8
Ques. 2 -	26	24	2	2,857 10 0

App. VIII.
No. 2.

3rd Class, 1st School.

Arithmetic.

Ques. 1. Find by practice the value of 623 articles, at 11*s.* 9¼*d.* each?

Ques. 2. If 6⅔ yards of muslin cost 1*l.* 7*s.* 9½*d.*, what will 4⅘ yards cost?

—	No. in Class.	No. right.	No. wrong.	Answers.
				£ s. d.
Ques. 1 -	27	21	6	366 13 2¾
Ques. 2 -	27	24	3	0 18 2 5/8 4

The following is a list of the subjects the boys of the first school had been taught, and in which they were prepared to be examined. We examined them ourselves in some of these subjects, and caused them to be examined in our presence by the students of the Normal School in others. We have generally reason to be satisfied with the results.

Subjects for Examination.

1st *School.*

1. Religious Instruction—
   - Acts of Apostles.
   - History of Elijah.
   - Catechism, &c.
2. Arithmetic—
   - Duodecimals.
   - Interest.
   - Proportion, simple and compound.
   - Vulgar Fractions.
   - Decimals.
   - Practice, &c.
3. Grammar—
   - Parsing, Rules of Syntax, and Analysis of Sentences.
4. English History—
   - Charles I.
   - The Commonwealth.
   - Charles II.
   - James II.
   - William III. and Mary.
   - Anne.
5. Geography—
   - Hindostan.
   - Cape Colony.
   - Germany.
   - Prussia.
   - Austria.
   - Denmark.
   - Norway and Sweden.
6. Poetry—
   - Milton, Book I.
   - Goldsmith's Deserted Village.
   - McCleod's Second Book of Poetry.
7. Dictation.
8. Vocal Music.

The method of teaching arithmetic is excellent. It is that known as the "Method by first principles," or "by reduction to the unit;" and, although little used in England, is, I believe, generally in use in America and on the Continent.*

The boys are taught not only to read poetry well, but to understand what they read. For this purpose they use annotated copies of the "First Book of Milton" and of "Goldsmith's Deserted Village."

They have also committed to memory much beautiful poetry. They have a very good general knowledge of geography and of those parts of English history specified as the parts in which they had been instructed.

* Mr. McLeod has published a small manual of this kind of arithmetic, entitled "Examples in Arithmetic by first Principles."

The following were the numbers resident in the asylum at the time of our examination :—

No. of boys present - - -	429
No. of boys in hospital and at the seaside -	39
No. of boys on duty - - - -	4
Total - -	472

The ages of the boys and the numbers of lessons given weekly in each subject to the different classes of the school, are stated in the following tables :—

Model School.

Ages of the Boys.

1st School.

Class.	9 to 10.	10 to 11.	11 to 12.	12 to 13.	13 to 14.	14 to 15.
I.	—	1	3	6	17	6
II.	—	1	4	10	11	2
III.	—	1	5	12	8	3
Totals	—	3	12	28	36	11

2nd School.

Class.	8 to 9.	9 to 10.	10 to 11.	11 to 12.	12 to 13.	13 to 14.	14 to 15.
I.	—	1	1	8	9	6	—
II.	—	—	1	6	11	11	1
III.	—	2	1	7	8	9	—
Totals	—	3	3	21	28	26	1

3rd School.

Class.	8 to 9.	9 to 10.	10 to 11.	11 to 12.	12 to 13.	13 to 14.
I.	—	3	4	7	10	4
II.	—	2	8	9	5	4
III.	2	5	6	12	3	—
Totals	2	10	18	28	18	8

App. VIII, No. 2.

4th School.

Class.	7 to 8.	8 to 9.	9 to 10.	10 to 11.	11 to 12.	12 to 13.	13 to 14.
I.	—	1	8	8	4	6	2
II.	—	1	7	9	9	3	—
III.	2	2	9	2	4	6	—
Totals	2	4	24	19	17	15	2

5th School.

Class.	5 to 6.	6 to 7.	7 to 8.	8 to 9.	9 to 10.	10 to 11.	11 to 12.
I.	—	—	5	5	10	3	5
II.	—	—	5	5	6	7	5
III.	—	—	7	12	7	—	3
IV.	—	8	9	5	5	4	—
V.	4	5	5	4	—	—	—
Totals	4	13	31	31	28	14	13

N.B.—In addition to the above, 473 in number, there were 4 assisting in the Infant School, and 20 at the Royal Victoria Hospital, Netley. The total strength, therefore, on the 24th June 1869 was 477 boys. The number sick on June 24th was 16.

Henry Moseley.

TABLE showing the NUMBER of LESSONS in each SUBJECT which are given weekly to each Class.

| School. | Class. | NUMBER OF LESSONS PER WEEK IN | | |

App. IX.
No. 1.

Appendix IX.—No. 1.

LECTURES.
1868-9.

Memorandum by Mr. McLeod.

Detailed accounts of the lectures given to the troops in 1868-9 have been received from 89 regiments, depôts,* &c.

These returns show that 2,122 lectures, readings, &c., were delivered during the season, and that 1,626 and 1,364 lectures were given by officers, chaplains, and army schoolmasters respectively. In addition to the experimental and illustrated lectures, 1,406 in number, there were given 362 readings, 137 concerts, and 217 theatrical performances. In these entertainments officers, army schoolmasters, non-commissioned officers, and men took an active part.

The letters R. C. and Th. P., placed after the stations in the annexed list, denote respectively readings, concerts, and theatrical performances; and the notes in Appendix IX., No. 2, show the stations where the non-commissioned officers and men took part in the concerts and dramatic entertainments.

Stations.	1868-69.		
Aberdeen	R.	—	—
Aldershot	R.	C.	Th. P.
Athlone	R.	—	—
Barbadoes	R.	—	—
Belfast	R.	—	—
Brighton	R.	—	—
Cahir	R.	—	—
Cape Town	—	C.	Th. P.
Chelsea Barracks	—	C.	—
Chester	R.	—	—
Colchester	R.	—	—
Cork	R.	C.	—
Curragh	R.	C.	—
Devonport	R.	C.	Th. P.
Dover	R.	C.	Th. P.
Dublin	R.	—	—
Edinburgh	R.	C.	—
Fleetwood	R.	C.	Th. P.
Fredericton	R.	C.	Th. P.
Gibraltar	R.	C.	Th. P.
Glasgow	R.	—	—
Hounslow	R.	—	Th. P.
Jamaica	R.	—	—
Kilkenny	R.	—	—
King William's Town	R.	—	—
Malta	R.	—	—
Manchester	R.	—	—
Montreal	R.	—	—

* There are several stations from which returns have not yet been received.

Station.	1868–69.		
Newcastle-on-Tyne	R.	—	—
Ottawa	R.	C.	—
Parkhurst	—	C.	—
Portland	R.	—	—
Portsmouth	R.	—	Th. P.
Preston	—	C.	Th. P.
Regent's Park	R.	C.	—
R. V. Hospital, Netley	R.	—	Th. P.
Sheerness	R.	—	—
Shorncliffe	R.	—	—
St. John, N.B.	R.	—	Th. P.
Sydney	R.	—	—
Toronto	—	—	Th. P.
Walmer	R.	C.	Th. P.
Warley	R.	—	Th. P.
Wellington Barracks	R.	—	Th. P.
Winchester	R.	—	Th. P.
Windsor	R.	C.	—
Woolwich	R.	C.	Th. P.
Yokohama	R.	—	Th. P.
York	—	C.	—

The following programme shows the manner in which readings and songs may be combined for the instruction and amusement of the men in camps, garrisons, &c.:—

Entertainment in the Recreation-room, F. Square, on Tuesday, the 9th March, 1869, at 7 p.m.

Reading	Staff Sergt. Greason, R.E.	"Besom Ben" (Waugh).
Part Song	Carabiniers	"The Warrior Norseman" (G. W. Martin).
Song	Sergt. Mulcaster, 63d Regt.	"Come into my Cabin Cock Robin."
Recitation	Sergt. Wilson, A.H.C.	"The one-legged Goose."
Glee	Carabiniers	"The Erl King" (Dr. Calcott).
Song	Corporal Develin, R.E.	"Ten o'Clock."
Reading	Sergt. Smith, 2/17th Regt.	"The Vagabonds."
Song	Sergt. Hanrahan, 18th R.I.	"Terry O'Rann."
	Carabiniers	"God bless the Prince of Wales."

Of the value of such entertainments as the above the editor of "*The Kaffrarian Watchman*" thus writes of readings and songs given to the men of the 9th Regiment, South Africa:—"We cannot "help thinking that the troops are very highly favoured in having "such a class of entertainments provided for them to which they "and their families are admitted *free of any charge*." And again: "—"We do not usually like repeating, but cannot help congra- "tulating all concerned upon the successful results attending the "establishment of military recreations in our town, where the "conduct and appreciation of the men, coupled with the zeal and "ability of the performers, would do credit to those who are apt "to misunderstand the tastes and underrate the abilities of our "gallant defenders."

App. IX. No. 1.

There is a decrease in the number of experimental lectures. The returns for 1867–8 gave 133 lectures; those for 1868–9 show that 87 were delivered, giving therefore a decrease of 46 lectures. This falling off is to be regretted as scientific lectures are most valuable, and are highly appreciated by the men.

The following are the stations at which lectures on chemistry, electricity, galvanism, &c., were delivered:—

1. Aberdeen.
2. Aldershot.
3. Chatham.
4. Curragh Camp.
5. Dublin.
6. Devonport.
7. Edinburgh.
8. Gibraltar.
9. Maidstone.
10. Parkhurst.
11. Portsmouth.
12. Preston.
13. Quebec.
14. Sheerness.
15. Woolwich.

That some idea may be formed of the nature of the lectures for which slides were not provided, the titles of some of those given are appended.

A.—Illustrated by Diagrams, Maps, Plans, &c.

1. Military History of the Romans.
2. Wonders of the Stars.
3. Carles XII. of Sweden.
4. Abyssinia and its Inhabitants.
5. The Road and the Rail.
6. Persecutions of the early Christians.
7. Music in Creation.
8. Reminiscences of the Crimea.
9. The Battle of Waterloo.

B.—Not Illustrated.

1. The Secret of Contentment.
2. Advantages of Military Service.
3. The Wit and Wisdom of Popular Proverbs.
4. Poverty and Genius.
5. Conquest of the Saracens.
6. Comets and their Relation to the Planetary System.
7. Wit and Humour of various Nations.

C.—Illustrated by Experiments.

1. Flame and the Davy Lamp.
2. Chemistry of the Air.
3. Wonders of Water.
4. Chemistry of Fermented Liquors.
5. Lucifer Matches.
6. Static Electricity.
7. The Electric Telegraph.

To afford facilities for the delivery of experimental lectures on science, a complete set of apparatus on frictional electricity has been

provided for use in garrisons, &c. This apparatus is lent to any station for a period not exceeding three weeks. The stations to which it has already been sent on application are Warley, the Tower, Windsor, and Shorncliffe.

Since the publication of the last report *additional sets of slides* on various subjects have been sent to Halifax, N.S., Barbadoes, the Cape of Good Hope, Yokohama, and Gibraltar; apparatus for lectures on science to Gibraltar, Portsmouth, Edinburgh, and Woolwich; *lanterns for oil* to Leeds, Bury, Gosport, Waterford, Kinsale, Bristol, Bermuda, Templemore, Fleetwood, Longford, St. John's (Newfoundland), and Yokohama; and *lanterns fitted with apparatus for the oxycalcium light* to Parkhurst, Newport (Mon.), and Preston.

In addition to the boxes of slides in regular circulation to the various stations, *extra sets of slides* were forwarded on application to Chester, Longford, Manchester, Netley, Shoeburyness, Cahir, Fleetwood, Wellington Barracks, Royal Military College, Parkhurst, Portland, Portsmouth, Woolwich, Chatham, Brighton, Newport, Bristol, and Colchester. These additional sets were required chiefly for the amusement of the children attending the regimental and garrison schools on fête days and at Christmas time.

There are 56 stations at home and 69 abroad, exclusive of those in India, where lectures were delivered to the troops during the season 1868–69; and to provide illustrations for the lectures at the home stations, there are in circulation 6 *sets of diagrams* and 65 *boxes of slides* on interesting and instructive subjects, besides 20 *boxes of slides* illustrative of nursery and other tales chiefly for the amusement of children, although it is found that the men and the parents of the children take as much interest in these tales as the children themselves.

Separate sets of slides are provided for the stations abroad, where the boxes do not circulate; and *sets for circulation* are, from time to time, sent to Canada, Ceylon, Gibraltar, and Malta. In reply to the requisitions from abroad the following new sets were supplied:—

1. Halifax, N.B.—The French Revolution. Ireland, box 1. The Overland Route.
2. Barbadoes. — Views in Scotland, box 2. Hans in Luck. The Musicians of Bremen.
3. Yokohama. — Natural History. China and the Chinese. Wild Sports of the World.
4. The Cape. — Medals of the British army, box 2. South America. Japan and the Japanese.
5. Gibraltar. — Natural History. The French Revolution. Hans in Luck. The Tale of a Tub. The Musicians of Bremen. Sinbad the Sailor, &c.

The following *new sets of slides* have been added to those in circulation since the issue of the last report:—

1. Natural History, box 3.
2. Our Land: Past and Present.
3. Views in Italy.
4. Rome and its Ruins.
5. Views in Denmark.
6. Views in Scotland, box 3.
7. Tom Thumb.
8. Jack the Giant Killer.
9. Robinson Crusoe.

App. IX. No. 1.

Detailed lists of the slides in each of the above sets will be found in the "Third supplementary list of slides on history, geography, &c., issued under the direction of the Council of Military Education, for the illustration of lectures to the troops at home and abroad."

The lectures, as may be seen from Appendix IX., No. 2, have been well attended both by adults and by children; and commanding officers and others speak highly of the labours of the army schoolmasters, and of the means provided by the War Department for the amusement and the improvement of the troops, both at home and abroad.

Appended are extracts from the returns as to the value of the lectures, &c.:—

"The lectures were very popular with the men in the garrison, who were very attentive and conducted themselves becomingly."

"Each lecture was well attended by men of all corps, with their wives and children; also by many officers and their families. Selections of music were performed by the band, and select songs were sung by the children, teachers, and soldiers."

"The attendance was highly satisfactory, and the concerts evidently much appreciated."

"During the delivery of these lectures the audience was most attentive, and appeared to be interested in the efforts made to amuse and instruct them."

"These lectures have afforded both instruction and amusement to the men, the attendance being so good that not half enough accommodation could be provided."

"I still retain the opinion I formed at first, namely, that lectures are a source of profitable amusement to soldiers and their families. To an intelligent, though imperfectly educated mind, they induce a desire for further information, which can only be obtained by reading; and this of itself proves a powerful inducement to the men to stay in barracks and gratify such desire, the library furnishing the means."

It is needless to multiply extracts from the various returns. The above are sufficient to show the importance of the agencies employed for the benefit of the troops; and the greater the scope afforded by means of libraries, lectures, and other educative agencies, for the mental and the moral improvement of the soldier and his children, the better will it be both for the army at large and for the general community.

Appendix IX.—No. 2.

App. IX. No. 2.

Statement of Lectures given to the Troops in the Winter of 1868–69.

Stations.	Lectures by Officers.	Lectures by Chaplains.	Lectures by Schoolmasters.	Readings.	Concerts.	Theatrical Entertainments.	Total Number.	Estimated Number at each Lecture.	
								Adults.[1]	Children.[1]
Aberdeen	1	1	11[2]	2	—	—	15	73 to 130	15 to 40
Aldershot	2	9	201[3]	57	41	16	326	60 „ 500	15 „ 150
Athlone	—	—	5	2	—	—	7	4 „ 15	35 „ 41
Barbadoes:—									
4th West India Regt., &c.	—	—	8	1	—	—	9	150 „ 260	30 „ 65
2nd Batt., 16th Regt. R.A.	—	—	4	3[4]	—	—	7	720 „ 790	120 „ 210
Belfast	—	—	8	8	—	—	16	10 „ 400	23 „ 70
Bombay (Coloba)	—	—	19	—	—	—	19	80 „ 300	—
Brighton	—	—	9	3	—	—	12	47 „ 76	8 to 16
Buttevant	—	—	7	—	—	—	7	45 „ 78	40 „ 53
Cahir	—	—	8	2	—	—	10	30 „ 100	30 „ 45
Canterbury	—	—	12	—	—	—	12	50 „ 150	10 „ 120
Cape Town	—	—	2	—	2	9	13	170 „ 186	15 „ 21
Carlisle	—	—	8	—	—	—	8	12 „ 30	2 „ 23
Chatham:—									
1st Depôt Battalion	—	—	14	—	—	—	14	10 „ 50	6 „ 70
2nd Depôt Battalion	—	—	15	—	—	—	15	20 „ 100	20 „ 150
3rd and 10th ditto	—	—	12	—	—	—	12	50 „ 100	40 „ 100
Chelsea Barracks	—	—	—	—	4	—	4[5]	1,000	—
Chester	—	—	19	1	—	—	20	30	20
Colchester	—	—	31	2	—	—	33	2 „ 280	6 to 50
Cork	—	—	11	4	4	—	19	60 „ 180	70 „ 90
Curragh Camp	—	—	39	11	10	—	60[6]	40 „ 200	12 „ 50
Devonport and Plymouth	—	—	43	1	2	12	58	10 „ 150	15 „ 120
Dover:—									
Citadel Barracks	—	—	7	—	—	—	7	7 „ 29	30 „ 38
1/4; 17th Reg.; 94th Reg.	2	—	18	—	4	9	33	22 „ 250	20 „ 80
17th Brigade, R. A.	2	—	4	—	4[7]	9[8]	19[9]	52 „ 250	59 „ 79

[1] The minimum and maximum numbers are given.

[2] One lecture by the Rev. Mr. Keay, and one by Mr. Laing. In addition to the regular lectures there were social entertainments, at which readings and addresses were given by the Rev. Dr. Longmuir, the Rev. G. Grey, and Messrs. Laing and Clarke.

[3] One lecture by Private Kehoe, 1/20 Foot; readings by the officers, non-commissioned officers, schoolmasters, and others; theatrical performances by the officers, of the Divisional Dramatic Club; experimental lectures by Professors Hambling, Beaumont, and Montague; and an assault of arms by Serjeant Major Tarbottom.

[4] School songs were sung by the children, teachers, and soldiers; and one lecture was illustrated by music (as well as by magic lantern) specially composed by Mr. Hartung, band master, 16th Regiment.

[5] Glees, madrigals, &c. by Schoolmaster Allen and the glee class 1st Battalion Coldstream Guards.

[6] There were, in addition, 11 microscopic and magic lantern exhibitions; readings by officers, and theatrical performances by men of the Military Train and the 63rd Regiment: and concerts by the band of 1/21 Regiment.

[7] Readings by Mr. Holden; two concerts by the Rev. W. Sykes and friends.

[8] Given by the Brigade Amateur Dramatic Club.

[9] Brigade singing class performed at each lecture. Two officers and several sergeants of the Brigade, together with Schoolmaster Bacon, took an active part in the solo singing. Lieut. Rawlins, R.A., kindly lent and presided at pianoforte.

App. IX.
No. 2.

Stations.	Lectures by Officers.	Lectures by Chaplains.	Lectures by Schoolmasters.	Readings.	Concerts.	Theatrical Entertainments.	Total Number.	Estimated Number at each Lecture.	
								Adults.	Children.
Dover:—									
91st Highlanders	—	—	6	—	—	—	6	7 to 29	30 to 40
27th Foot	—	—	8	1	—	—	9	20 „ 93	22 „ 65
Dublin	—	—	61	3	—	—	64	80 „ 250	20 „ 480
Edinburgh	1	—	41	31	6	—	79	10 „ 150	10 „ 60
Fermoy	—	—	3	—	—	—	3	120 „ 200	—
Fleetwood	—	—	4	8	3	13[1]	28	150 „ 300	18 „ 24
Fredericton, N.B.	1	—	—	6	2[2]	6[3]	15	75 „ 110	8
Gibraltar	—	—	49	16	2[4]	2	69	20 „ 160	4 „ 50
Glasgow	—	—	6	1	—	—	7	12 „ 50	9 „ 20
Halifax, N.S.:									
1st Battalion, 16th Regt.	—	—	8	—	—	—	8	100	—
30th Regiment	—	—	5	—	—	—	5	25 „ 80	18 „ 40
Hounslow	—	—	9	2	—	12	23	20 „ 200	55 to 60
Jamaica									
3rd West India Regt.	—	1[5]	—	—	—	—	1	—	—
84 Regiment and R.A.	—	—	—	6	—	—	6	260 „ 370	—
Kilkenny	—	—	8	6	—	—	14[6]	20 „ 240	20 „ 60
King William's Town, South Africa:—									
1st Battalion, 9th Regt.	—	—	3	3[7]	—	—	6	230 „ 280	20 to 30
Garrison and 1/9th Regt.	—	—	6	2	—	—	8	180 „ 310	—
Cape Mounted Riflemen	—	—	12	—	—	—	12	120	15
Kingston, Ontario	—	—	4	—	—	—	4	11 „ 93	35 „ 75
Limerick	—	2[8]	7	—	—	7	16	20 „ 150	10 „ 70
London, Ontario	—	1	11	—	—	—	12	30 „ 50	28 „ 32
Longford	—	—	10	—	—	—	10	40	10
Maidstone	1	—	14	—	—	—	15[9]	6 „ 40	5 to 48
Malta:—									
48th and 87th Regiment	—	—	3	3	—	—	6	40 „ 150	—
52nd and 46th Reg. & R.A.	—	—	14	5	—	—	19	70 „ 210	—
Manchester and Bury	—	—	35	20	—	—	55	12 „ 140	8 to 30
Montreal:—									
78th Regiment	—	—	10	1[10]	—	—	11	50 „ 200	—
69th ditto	—	—	5	—	—	—	5	30 to 120	—
1st Batt., 60th Royal Rifles	—	—	20	—	—	—	20	90 „ 200	—
3rd Brigade, R.A.	—	—	35	—	—	—	35	43 „ 107	—
Newcastle-on-Tyne	—	—	6	2[11]	—	—	8	15 „ 100	30
Ottawa, Ontario:									
1st Batt., Rifle Brigade	—	—	42	73	8	—	123	35 „ 96	5 to 36

[1] By the officers, non-commissioned officers, and men of the 80th Regiment.
[2] and [3] By the non-commissioned officers and men under direction of Serjeant Major Kelly, 1/22 Regiment.
[4] One of the concerts by the ladies of Col. Maberly's family. The theatrical entertainments by the officers and non-commissioned officers of the 28th Regiment.
[5] By Rev. Mr. Pierce.
[6] The band of the 44th Regiment played several selections at each entertainment; songs, &c. were also sung by officers, non-commissioned officers, and men; readings by officers and non-commissioned officers, and others.
[7] Readings, recitations, songs, &c. by non-commissioned officers and men.
[8] One by the Dean of Limerick; theatrical entertainment by Sergeant Major Allan and Lance Corporal A. Bennett.
[9] This includes three exhibitions of dissolving views.
[10] Reading by Assistant Commissary General Palmer.
[11] Readings by Schoolmaster Ship and sergeants of 2/22 Regiment.

Stations.	Lectures by Officers.	Lectures by Chaplains.	Lectures by Schoolmasters.	Readings.	Concerts.	Theatrical Entertainments.	Total Number.	Estimated Number at each Lecture.	
								Adults.	Children.
Parkhurst	1	—	14	—	1	—	16	20 to 300	20 to 100
Pembroke Dock	—	—	7	—	—	—	7[1]	50 „ 300	—
Portland	—	3	9	3	—	—	15	38 „ 175	12 to 40
Portsmouth and Gosport	—	2	68	30	—	4	104	16 „ 350	12 „ 56
Preston	—	—	10	—	2[2]	4[2]	16	40 „ 280	40 „ 60
Quebec	1	—	8[3]	—	—	—		40 „ 130	8 „ 15
Regent's Park	—	—	7[4]	2	2	—	11	15 „ 120	65 „ 83
Royal Hibernian Schools	—	—	5	—	—	—	5	—	200
Royal Military Asylum	—	—	26[5]	—	—	—	26	40 to 50	200 „ 220
Royal Military College	—	—	1	—	—	—	1	12	40
Royal Victoria Hospital, Netley	4	—	10	2	—	4	20	130 to 250	50 to 100
Sheffield	—	—	8	—	—	—	8[6]	23 „ 120	44 „ 80
Sheerness	—	—	16	1	—	—	17	10 „ 52	29 „ 120
Shorncliffe:—									
10th Depôt Battalion	—	—	8	—	—	—	8	80 „ 150	50 „ 170
12th ditto ditto	—	—	8	8	—	—	9	60 „ 150	20 „ 350[7]
St. John, P.Q.	—	1	4	—	—	—	5	100 „ 120	40 „ 60
St. John, N.B.	—	—	—	4	—	32	36[8]	200 „ 300	—
St. John's, Newfoundland	1	—	9	—	—	—	10	20 „ 81	30 to 100
Sydney	—	4	5	1	—	—	10	57 „ 125	49 „ 51
Toronto, Ontario:—									
29th Regiment	—	—	42	—	—	—	42	30 „ 90	15 „ 20
13th Hussars	—	—	21	—	—	12[9]	33	30 „ 250	18 „ 120
New Fort	—	—	17	—	—	—	17	15 „ 105	7 „ 55
Walmer	—	—	7[10]	2	5	5	19	100 „ 600	80 „ 100
Warley	—	—	14	1	—	11	26	80 „ 200	—
Wellington Barracks:									
1st Batt., S. F. Guards	—	—	4	—	—	—	4	70 „ 100	90
1st Batt., Gren. Guards	—	—	5	2	—	4	11	14 „ 95	15 to 68
Winchester	—	—	11	7[11]	—	12[11]	30	50 „ 550	45 „ 60
Windsor:—									
Infantry Barracks	—	—	5	—	—	—	5	100 „ 200	45 „ 50
1st Life Guards	—	—	18	6	3	—	27	14 „ 280	8 „ 43
Woolwich	—	1	16	4	20	25[12]	66	78 „ 100	10 „ 30
Yokohama, Japan	—	—	2	8[13]	—	—	10	50 „ 250	15 „ 30
York	—	—	8	—	2	21	31	5 „ 25	40 „ 50

[1] Omitted in last report.
[2] Given by non-commissioned officers and men.
[3] Four lectures by J. Ahern, Esq.
[4] Two lectures by Lance-Corporal A. Collins.
[5] Given by the masters and the students of the model schools.
[6] Vocal and instrumental music, at all the lectures, by the Children's Glee Class, 14th Depôt Battalion.
[7] A lecture given to the children of the garrison.
[8] Readings by J. Boyd, Esq.; theatrical performances by the Dramatic Club of the Battalion, in a theatre built by themselves for the purpose.
[9] By the Amateur Company, 13th Hussars.
[10] One lecture by Staff Sergeant Jones, and one by Colour Sergeant Laverock.
[11] The entertainments, (readings, songs, &c.) were given by ladies, officers, non-commissioned officers, and men.
[12] The theatrical performances by the officers and non-commissioned officers Royal Artillery; concerts by the band of Royal Artillery; and the readings by the non-commissioned officers.
[13] Instrumental and vocal music, at the readings, &c., by volunteers of the band, and by non-commissioned officers of 1/10 Foot, and a sapper of the Royal Engineers.

App. IX.
No. 3.

Appendix IX.—No. 3.

Names of Superintending and Army Schoolmasters who have given Lectures during the Season of 1868–9.

Stations.	Lecturers.	No. of Lectures, &c.
Aberdeen	J. Anderson	7 lectures.
Aldershot	Sup. Schm. J. Belling, B.A.	16.
	F. Fowler	35, including 8 microscopic exhibitions.
	Hobbs	33 „
	Scholvien	13 „ 1 reading.
	Astbury	13.
	Winter	10 „ 4 readings.
	Hickling	10 „ 3 „
	Wheeler	9.
	Rix	9.
	Carson	9.
	M'Lean	5 and 3 concerts.
	Smears	8, including 6 readings, &c.
	Perkins	7 „ 1 reading.
	Coo	6.
	Taylor	5.
	Hamilton	4.
	Henry	2.
Athlone	J. Kavanagh	5 and 2 concerts.
Barbados	Js. Davis	8 and 1 concert.
	John Porter	7, including 3 readings.
Belfast	J. Howard	8 and 8 readings.
Bombay (Colaba)	W. Bartram	19.
Brighton	J. Hayes	7.
	Miss Robinson	2.
Buttevant	Burns	7.
Cahir	E. Annett	8 and 2 readings.
Canterbury	Bolus	12.
Cape Town	R. Raymer	2.
Carlisle	T. Macmahon	8.
Chatham	D. McIlheron	11.
	A. J. Baillie	4.
	T. Polden	4.
	T. W. Docherty	10.
	A. Parsons	9.
	F. Alderton	2.
Chelsea Barracks	Allen	4 concerts.
Chester	F. J. Major	19.

Stations.	Lecturers.	No. of Lectures, &c.
Colchester -	Stapley - - -	9 and 2 readings.
	Bell - - -	9 and 1 reading.
	Wroughton - -	7.
	Williams - - -	6.
Cork - -	M. Black - - -	7.
	M. Loftus - -	2.
	W. Bryan - - -	2.
Curragh Camp -	Sup. Schm. G. Robertson	19 and 4 magic lantern exhibitions.
	W. Halfpenny - -	6.
	G. Holland - - -	8 and 7 microscopic exhibitions.
	W. Bryan - - -	1.
	Fletcher - - -	2.
Devonport -	Sup. Schm. Savage -	20.
	Venner - - -	11.
	Ovens - - -	5.
	Cochrane - -	7.
Dover - -	Sup. Schm. Stewart -	6.
	W. Masterson - -	4.
	Carthew - -	8.
	Marshall - - -	8.
	Bacon - - -	4 and an active part in solo singing.
	Louis Matthews - -	7 and 1 reading.
Dublin - -	Sup. Schm. Newsom -	31.
	Bird - - -	3.
	Morgan - - -	7. Gave lecture on Japan in R. H. M. schools by special request, and took part in 3 readings.
	Gilbert - - -	6 and took part in 3 readings.
	Lowry - - -	3.
	Wells - - - -	4.
	Shields - - -	2.
	Fletcher - - -	4.
	Green - - -	1.
	Porter - - - -	Took part in 3 readings.
Edinburgh -	Sup. Schm. C. Carnegie -	24 and 19 readings.
	McEwen - - -	7 and 5 „
	Brown - - -	1 and 1 reading.
	Wilson - - - -	3 and 5 readings.
	Act. Schm. Moran -	3.
Fermoy - -	C. Wilson - - -	2.
	W. B. Aldwell - -	1.
Fleetwood -	McElwee - -	4 and 8 readings.
Fredericton, N.B.	W. R. Hall - - -	Took part in 6 readings.
Gibraltar -	Gell - - -	15.
	Macartney - - -	11.
	Gillmore - - -	10.
	Bell - - - -	4.
	McCormack - - -	11.
	Dunnett - - -	14.

APP. IX. No. 8

Stations.	Lecturers.	No. of Lectures, &c.
Glasgow	J. Hopkins	6.
Halifax, N. S.	E. Bramhall	8.
	R. Waters	5.
Hounslow	J. S. Abbott	9.
Jamaica	G. Ruggles	6 readings and vocal music.
Kilkenny	B. White	8.
King William's Town, Cape.	G. Curtis	11 and 3 readings and concerts.
	J. Northway, Cape Rifles	12.
Kingston, Canada	Mallandain	4.
Limerick	Belling	7.
London, Ontario	Sup. Schm. S. Stockham	7.
	A. McMahon	1.
	Corp. Downey	1.
	Corp. Leake	3.
Longford	J. B. Eldridge	10.
Maidstone	Goadby	11.
Malta	Scarlett	1.
	Stubbs	2.
	Henderson	5 and 4 readings.
	Moore	1.
	Murray	3.
	Boland	2 and 4 readings.
	Compton	3.
Manchester and Bury.	Stevenson	20.
	Hill	9.
	Bass	6 and 5 readings; also took part in 6 readings. 3 readings at Aldershott, and 4 at Manchester omitted in last report.
	Brown	3 readings in 1867-68.
Montreal	Sup. Schm. J. Little	37.
	McMahon	3.
	Fleming	7.
	Myles	12.
	Hebb	10.
Newcastle-on-Tyne.	Ship	6 and took part in 2 readings.
Ottawa, Ontario	James Foster	42.
Parkhurst	James M'Lean	14.
	Mrs. and J. M'Lean	1.
Pembroke Dock	McArdle	7 omitted in last report.
Portland	J. W. Stewart	12.
Portsmouth, Gosport, &c.	Sup. Schm. R. Kirk	15 and took part in 12 readings, &c.
	Carroll	4 and took part in 5 readings.

Stations.	Lecturers.	No. of Lectures, &c.
Portsmouth, Gosport, &c.	Mrs. Carroll	Took an active part in 10 readings and concerts.
	R. Palmer	11 and took part in 7 readings and 3 dramatic performances.
	Walker	5 and took part in 3 readings.
	W. Bacon	14.
	Weller	7 and took part in 5 musical entertainments.
	Berresford	8.
	W. J. Brown	4 lectures on the Battle of Waterloo, illustrated by large drawings made by himself.
Preston	H. Colquhoun	9.
	J. James	1.
Quebec	T. Davidson	4.
Regent's Park	A. Douthett	5.
Royal Hibernian Military Schools	Mr. Gibbons	1.
	Mr. Morgan	1.
	Mr. Young	1.
	Mr. Hoskins	1.
	Mr. Stritch	1.
Royal Military College.	H. Keley	1.
Royal Victoria Hospital, Netley.	Cooper	10.
Sheffield	R. Bateman	3.
	A. Capon	4.
	M. Treacy	1.
Sheerness	Lowman	16 and took part in 1 reading.
Shorncliffe	F. Alderton	5.
	D. McKay	7.
	A. Parsons	3.
	Aldwell	1.
St. John, Prov. Quebec.	A. Robertson	4.
St. John's, Newfoundland.	Hicks	9.
Sydney	J. R. Gunn	5 and 1 reading.
Toronto	Sup. Schm. S. Stockham	56.
	P. H. Clarke	8.
	W. Fryer	12.
	Flood	4.
Walmer	E. Giles	4.
	Shields	1.
Warley	Stanton	14.
Wellington Barracks.	Sup. Schm. T. Earp	2.
	„ J. Newsom	1.

APP. IX.
No. 3.

Stations.	Lecturers.	No. of Lectures, &c.
Wellington Barracks.	W. Richardson A. Thomson	3. 3.
Winchester	G. Rice C. Marshall	6. 5.
Windsor	Minnion John Pollard	5. 18.
Woolwich	Sup. Schm. J. Grant Thacker Rogers	4. 3. 9.
Yokohama	Kidd	2 and 8 readings.
York	T. Short	8.

Appendix X.

App. X.

LIST OF ARMY LIBRARIES, 1868-9.

Garrison Libraries.

Station.	No. of Companies.	No. of Volumes in the Library 31st March 1869.	No. of Volumes circulating during the Year 1868-9.	Contributions from Recreation Rooms, and Officers' Subscriptions to Library Funds.		
				£	s.	d.
Aberdeen	6	1,092	4,096	20	7	6
Adelaide	3	499	2,353	9	13	7
Alderney	3	486	1,740	3	0	0
Aldershot	130	9,790	22,134	173	18	3
Ashton	5	336	896	5	0	0
Athlone	11	1,704	5,744	22	12	6
Ayr	2	336	2,489	7	3	10
Bahamas	—	126	—		—	
Ballincollig	—	649	30		—	
Barbadoes	12	2,494	1,373	20	19	0
Bathurst	2	501	280	8	1	8
Belfast	9	1,304	3,961	8	15	0
Bermuda	21	2,044	1,409	30	2	0
Birmingham	2	529	760	6	11	3
Birr	2	1,494	2,275	2	0	0
Bradford	2	89	427	1	10	0
Brighton	4	430	2,573	11	7	6
Burnley	2	541	363	4	0	0
Bury	4	326	2,529	8	10	0
Buttevant	7	1,238	3,350	17	12	6
Cahir	4	499	2,150	12	12	6
Canterbury	12	2,510	3,078	21	2	6
Cape Coast Castle	4	451	194	13	2	6
Cape Town	13	1,724	1,730	23	5	6
Carlisle	3	150	138	3	0	0
Ceylon	24	4,020	7,030	35	2	6
Chatham	48	6,216	26,766	41	16	2
Chester	5	496	2,763	5	10	0
Chichester	8	554	1,525	6	0	0
Clonmel	4	524	3,374	12	19	6
Colchester	32	2,277	5,706	41	17	6
Cork	15	2,092	2,240	14	10	4
Coventry	2	337	587	7	8	3
Curragh	50	4,406	11,722	67	16	2
Demerara	2	928	—	1	10	0
Devonport	29	4,249	9,219	28	15	0
Dorchester	1	543	950	1	0	0
Dover	32	3,129	6,253	34	4	8
Dublin	64	7,697	10,381	75	19	7
Dundalk	7	535	3,169	16	12	6
Edinburgh Castle	10	1,494	4,257	7	10	0
Edinburgh, Piershill Barracks	3	1,090	2,130	9	18	0
Enniskillen	4	761	2,012	14	4	6
Exeter	—	408	—		—	
Fermoy	14	2,043	3,465	23	12	6
Fleetwood	6	491	398	5	5	0

APP. X.

Station.	No. of Companies.	No. of Volumes in the Library 31st March 1869.	No. of Volumes circulating during the Year 1868-9.	Contributions from Recreation Rooms, and Officers' Subscriptions to Library Funds.		
				£	s.	d.
Fort Beaufort	10	648	1,323	17	2	6
Fort George	6	484	1,272	6	15	10
Fredericton	10	850	2,954	12	5	6
Gibraltar	50	5,864	6,368	68	8	4
Glasgow	5	1,543	2,615	14	13	6
Graham's Town	9	874	2,358	18	11	1
Guernsey	3	1,243	862	7	14	3
Halifax, N. S., Citadel	10	1,161	4,302	16	16	6
Halifax, N.S., Wellington Barracks	10	1,150	3,850	19	2	0
Hamilton, Canada	4	1,117	560	3	10	0
Hamilton, N. B.	4	501	2,307	12	10	0
Hobart Town	3	1,832	1,147	12	2	6
Hong Kong	11	2,017	2,960	21	2	6
Horfield	4	580	600	3	0	0
Hounslow	5	673	3,229	11	8	2
Hythe	4	—	—	7	0	0
Ipswich	—	533	—		—	
Isle of Man	—	488	293	0	7	11
Jamaica	19	2,234	3,618	27	17	0
Jersey	5	1,081	2,536	13	7	6
Kilkenny	4	823	2,793	14	17	6
King William's Town	12	1,683	1,266	20	2	0
Kingston, Canada	9	1,365	962	19	3	4
Kinsale	6	590	2,380	11	5	0
Leeds	5	281	506	7	13	6
Limerick	14	2,688	3,164	21	13	6
Liverpool	—	343	—		—	
London (Tower)	—	498	563	1	15	4
London, Canada	5	719	980	3	5	0
Londonderry	3	348	1,522	5	18	9
Longford	2	490	241	3	15	0
Maidstone	2	752	1,835	11	2	6
Malta	60	6,553	10,218	60	0	0
Manchester, Hulme	6	762	1,808	13	17	0
Manchester, Salford	10	1,540	6,238	19	2	6
Mauritius	10	2,140	1,570	26	12	6
Melbourne	5	775	2,570	5	5	0
Montreal	48	2,277	6,938	55	5	0
Mullingar	3	858	1,555	4	5	0
Natal	4	859	1,343	17	12	8
Newbridge	10	949	1,981	19	17	6
Newcastle	4	771	1,731	13	2	6
Newfoundland	3	780	2,565	19	9	8
Newry	3	706	1,854	10	6	0
Norwich	1	269	1,077	5	12	8
Paisley	3	559	975	4	10	2
Parkhurst	18	2,427	12,520	32	7	6
Pembroke	17	2,114	2,634	24	16	4
Perth	3	515	1,990	12	3	2
Portsmouth	53	6,423	6,074	57	2	8
Portland	7	338	6,390	7	7	9
Preston	14	1,697	10,529	24	7	6
Quebec	20	1,682	1,718	29	3	11
Sheffield	10	1,683	5,909	17	19	0

Station.	No. of Companies.	No. of Volumes in the Library 31st March 1869.	No. of Volumes circulating during the Year 1868-9.	Contributions from Recreation Rooms, and Officers' Subscriptions to Library Funds. £ s. d.
Shorncliffe	36	4,044	11,160	37 15 0
Sierra Leone	6	529	45	7 11 6
Spike Island	10	1,148	2,629	13 11 0
Stirling	4	1,291	3,728	11 2 0
St. Helena	4	1,213	3,237	18 8 9
St. John, New Brunswick	11	1,409	5,501	31 16 9
St. Lucia	—	636	—	—
Sunderland	3	474	444	8 3 0
Sydney	6	2,080	3,235	17 2 6
Templemore	3	1,349	2,174	3 0 0
Toronto	14	1,212	3,120	25 1 8
Tralee	2	357	1,119	2 15 0
Trinidad	2	1,077	1,316	8 10 6
Tynemouth	3	502	415	3 0 0
Walmer	12	1,723	3,030	19 10 6
Warley	5	3,426	4,655	18 13 11
Waterford	7	807	1,092	15 12 0
Weedon	6	854	3,014	15 3 6
Weymouth	5	413	1,196	9 6 3
Winchester	16	1,839	7,277	24 18 10
Woolwich	9	719	1,264	18 9 2
Yokohama	10	1,132	2,613	21 12 6
York	8	1,226	2,299	14 12 0
Total Garrison Libraries	1,351	177,222	387,135	2,126 8 7

Royal Artillery Libraries.

Alderney	1	423	1,112	7 8 9
Barbadoes	1	926	620	1 0 0
Bermuda	2	531	1,329	6 14 7
Dover	8	1,074	4,151	5 17 6
Dublin	3	1,473	1,750	6 19 3
Gibraltar	8	1,518	4,471	9 15 5
Halifax, N. S.	3	1,515	4,010	2 0 0
Jamaica	2	458	2,220	7 15 10
Jersey	1	531	1,016	1 9 0
Leith Fort	1	827	1,253	2 6 1
Malta	8	1,895	11,132	26 0 0
Mauritius	2	737	1,198	6 15 4
Plymouth	5	1,250	5,841	21 19 3
Portsmouth	7	803	3,320	13 15 11
Quebec	4	967	2,789	33 5 2
Sheerness	5	1,575	9,590	23 7 5
Shoeburyness	3	1,123	3,921	13 4 0
Shorncliffe	2	973	2,443	3 5 5
St. Helena	3	711	3,967	8 6 4
Woolwich, Non-Commissioned Officers	19	5,795	20,800	74 8 4
Woolwich, Gunners	19	3,910	14,963	2 5 4
Total Royal Artillery Libraries	107	29,015	101,896	277 18 11

App. X.

Station.	No. of Companies.	No. of Volumes in the Library 31st March 1869.	No. of Volumes circulating during the Year 1868-9.	Contributions from Recreation Rooms, and Officers' Subscriptions to Library Funds.
				£ s. d.
Royal Engineer Libraries.				
Aldershot	3	706	4,015	5 13 6
Bermuda	4	207	917	—
Chatham	8	2,499	9,540	82 18 6
Dublin	1	2,023	1,330	18 3 6
Guildford	1	1,117	662	3 14 0
Halifax, N.S.	2	568	1,081	8 6 2
Inverness	1	704	351	4 16 1
King William's Town	2	672	2,240	7 13 4
Malta	2	874	2,374	9 3 8
Mauritius	1	789	467	—
Portsmouth	1	311	533	2 2 0
Southampton	1	1,460	1,138	17 2 2
Woolwich	2	490	782	2 10 6
Total Royal Engineer Libraries	29	12,420	25,430	162 3 5
Total Garrison Libraries	1,351	177,222	387,135	2,126 8 7
Total Royal Artillery Libraries	107	29,015	101,896	277 18 11
Total Royal Engineer Libraries	29	12,420	25,430	162 3 5
General Total	1,487	218,657	514,461	2,566 10 11

L.
Por.
Presto.
Quebe.
Sheffield

Appendix XI.

List of Regimental Recreation Rooms, 1868–9.

Regiment.	Where Stationed.	Number of Rooms.	Refreshment Bar.	Number of Subscribers, Mar. 31, 1869.
1st Dragoon Guards	Sheffield	1	No	135
2nd „	Bombay.			
3rd „	Chichester	2	No	272
4th „	Shorncliffe.	2	Yes	344
5th „	Aldershot	2	Yes	264
6th „	Longford	1	Yes	217
7th „	Colchester	1	Yes	325
1st Dragoons	Dublin	2	Yes	438
2nd „	Cork	2	Yes	297
	Cahir	1	Yes	
3rd Hussars	Bombay	1	No	378
4th „	Bengal.			
5th Lancers	Ditto.			
6th Dragoons	Manchester	2	No	404
7th Hussars	Bengal.			
8th „	Edinburgh	1	No	317
	Hamilton	2	No	
9th Lancers	Newbridge	2	Yes	494
10th Hussars	Aldershot	2	Yes	331
11th „	Bengal.			
12th Lancers	Dundalk	1	Yes	302
13th Hussars	Toronto	1	No	400
14th „	Dublin	1	Yes	451
15th „	York	2	Yes	398
16th Lancers	Madras.			
17th „	Hounslow	2	No	368
18th Hussars	Madras.			
19th „	Bengal.			
20th „	Ditto.			
21st „	Ditto.			
Military Train	Aldershot	3	Yes	475
	Curragh	1	Yes	141
	Dublin	1	Yes	123
	Woolwich	2	Yes	303
Grenadier Guards, 1st Batt.	Dublin	2	No	543
„ „ 2nd „	Windsor	2	No	667
„ „ 3rd „	Chelsea	1	No	633
Coldstream Guards, 1st „	Ditto.	1	Yes	512
„ „ 2nd „	Tower	2	No	377
Scots Fusil. Grds., 1st „	London	2	No	685
„ „ 2nd „	Ditto	2	No	511
1st Foot, 1st Batt.	Madras.			
„ 2nd „	Bombay.			

App. XI.

Regiment.	Where Stationed.	Number of Rooms.	Refreshment Bar.	Number of Subscribers, Mar. 31, 1869.
2nd Foot, 1st Batt.	Bombay.			
„ 2nd „	Aldershot	2	Yes	463
3rd Foot, 1st „	Bengal.			
„ 2nd „	Devonport	1	Yes	391
4th Foot, 1st „	Dover	1	Yes	93
„ 2nd „	Dublin	2	Yes	331
5th Foot, 1st „	Bengal.			
„ 2nd „	Aldershot	2	No	308
6th Foot, 1st „	Bengal.			
„ 2nd „	Aldershot	2	Yes	476
7th Foot, 1st „	Bengal.			
„ 2nd „	Bury	1	No	255
8th Foot, 1st „	Bombay.	2	Yes	537
„ 2nd „	Aldershot	2	Yes	398
9th Foot, 1st „	King William's Town	1	No	312
„ 2nd „	Dublin	2	Yes	271
10th Foot, 1st „	Japan	1	Yes	358
„ 2nd „	Madras.			
11th Foot, 1st „	Bengal.			
„ 2nd „	Graham's Town	1	No	211
12th Foot, 1st „	Aldershot	2	Yes	390
„ 2nd „	Bengal.			
13th Foot, 1st „	Gibraltar	2	Yes	491
„ 2nd „	Gosport	1	No	321
14th Foot, 1st „	Bombay.	1	Yes	485
„ 2nd „	Hobart Town	1	Yes	346
	Melbourne	1	Yes	
15th Foot, 1st „	Bermuda.	1	No	446
„ 2nd „	Cork	2	Yes	257
16th Foot, 1st „	Halifax	1	Yes	463
„ 2nd „	Dublin	2	Yes	249
17th Foot, 1st „	Newry	2	Yes	683
„ 2nd „	Mullingar	2	Yes	215
18th Foot, 1st „	Curragh	2	Yes	373
„ 2nd „	New Zealand.	1	No	139
19th Foot, 1st „	Bengal.			
„ 2nd „	Madras.			
20th Foot, 1st „	Aldershot	2	Yes	345
„ 2nd „	Fort Beaufort	1	No	134
21st Foot, 1st „	Curragh	2	Yes	438
„ 2nd „	Madras.			
22nd Foot, 1st „	Fredericton	1	No	544
„ 2nd „	Newcastle	1	Yes	196
23rd Foot, 1st „	Bombay.			
„ 2nd „	Brecon	1	No	435
	Newport	1	Yes	
24th Foot, 1st „	Malta	3	Yes	501
„ 2nd „	Burmah.			
25th Foot, 1st „	Aldershot	2	Yes	579
„ 2nd Batt.	Bengal.			
26th Foot	Ditto.			
27th „	Chatham.	2	No	92
28th „	Gibraltar	1	Yes	492

Regiment.	Where Stationed.	Number of Rooms.	Refreshment Bar.	Number of Subscribers, Mar. 31, 1869.
29th Foot	Toronto	2	Yes	596
30th „	Halifax	1	No	529
31st „	Malta	1	Yes	454
32nd „	Fort Beaufort	1	Yes	298
33rd „	Portsmouth	1	Yes	334
34th „	Aldershot	2	Yes	494
35th „	Portsmouth	2	Yes	373
36th „	Bengal.			
37th „	Ditto.			
38th „	Ditto.			
39th „	Fermoy	2	Yes	401
40th „	Ashton	2	No	274
	Carlisle	1	No	
41st „	Bengal.			
42nd „	Edinburgh	1	No	428
43rd „	Jersey	1	No	467
	Guernsey	1	No	
44th „	Kilkenny	2	Yes	384
45th „	Madras.			
46th „	Bombay.			
47th „	Barbadoes	1	Yes	394
	Trinidad	1	No	
48th „	Malta.	2	Yes	488
49th „	Bombay.			
50th „	Sydney	1	Yes	254
51st „	Portland	1	No	336
52nd „	Malta	2	Yes	449
53rd „	Quebec	2	Yes	517
54th „	Belfast	2	No	315
	Londonderry	1	No	
55th „	Bengal.			
56th „	Waterford	2	Yes	125
57th „	Devonport	2	Yes	236
58th „	Bengal.			
59th „	Ceylon	2	Yes	204
60th Rifles, 1st Batt.	Montreal	1	Yes	608
„ 2nd „	Bengal.			
„ 3rd „	Madras.			
„ 4th „	New Brunswick	1	Yes	752
61st Foot	Bermuda	2	Yes	621
62nd „	Cork	2	Yes	639
63rd „	Fermoy	2	Yes	248
64th „	Malta	2	Yes	514
65th „	Dublin	1	Yes	288
66th „	Curragh	2	Yes	337
67th „	Portsmouth	2	Yes	137
68th „	Manchester	2	No	407
69th „	Montreal	2	Yes	469
70th „	Kinsale	2	Yes	190
71st „	Gibraltar	1	No	382
72nd „	Limerick	2	Yes	358
73rd „	Colombo	2	Yes	201
74th „	Gibraltar	2	Yes	480
75th „	Hong Kong	1	No	367

App. XI.

Regiment.	Where Stationed.	Number of Rooms.	Refreshment Bar.	Number of Subscribers, Mar. 31, 1869.
76th Foot	Burmah.			
77th „	Bengal.			
78th „	Montreal	2	No	733
79th „	Bengal.			
80th „	Fleetwood	1	No	289
81st „	Buttevant	2	Yes	343
82nd „	Bombay.			
83rd „	Gibraltar	2	Yes	584
84th „	Jamaica	2	Yes	559
85th „	Bengal.			
86th „	Mauritius	1	Yes	314
87th „	Malta	2	No	453
88th „	Bengal.			
89th „	Athlone	2	Yes	360
90th „	Bengal.			
91st „	Dover	1	Yes	140
92nd „	Curragh	2	Yes	134
93rd „	Bengal.	2	Yes	349
94th „	Dover	2	No	271
95th „	Bombay.			
96th „	Ditto.			
97th „	Aldershot	2	Yes	566
98th „	Ditto	3	Yes	568
99th „	Cape Town	1	Yes	323
100th „	Montreal	2	Yes	577
101st „	Gosport	2	Yes	194
102nd „	Bengal.			
103rd „	Ditto.			
104th „	Ditto.			
105th „	Ditto.			
106th „	Ditto.			
107th „	Ditto.			
108th „	Bombay.			
109th „	Bengal.			
Rifle Brigade, 1st Batt.	Ottawa	1	No	631
„ 2nd „	Devonport	2	Yes	455
„ 3rd „	Bengal.			
„ 4th „	Chester	1	Yes	490
West India Regiments, 1st	Bathurst	1	No	57
	Sierra Leone	1	Yes	71
„ „ 2nd	Cape Coast Castle	1	No	46
„ „ 3rd	Jamaica.			
„ „ 4th	Barbadoes	2	No	18
Ceylon Rifle Regiment	Ceylon	1	No	644
Cape Mounted Riflemen	King William's Town.	2	No	96
Royal Canadian Rifle Regiment	Chambly	1	No	75
	Isle Aux Noix	1	No	60
	Kingston	2	Yes	266
	St. John	2	No	151
	Newfoundland	1	No	124

Regiment.	Where Stationed.	Number of Rooms.	Refreshment Bar.	Number of Subscribers, Mar. 31, 1869.
Commissariat Staff Corps	Aldershot	2	Yes	112
	Dublin	1	Yes	71
Military Store Staff Corps	Woolwich	1	No	167
Military Labourers	Barbadoes	1	No	175
School of Musketry	Hythe	1	No	44
Depôt Battalions, 3rd	Shorncliffe	2	Yes	173
„ 4th	Colchester	2	Yes	426
„ 5th	Parkhurst	2	Yes	424
„ 6th	Walmer	2	Yes	424
„ 7th	Winchester	2	Yes	272
„ 8th	Colchester	3	Yes	590
„ 9th	Preston	3	Yes	541
„ 10th	Shorncliffe	1	Yes	356
„ 11th	Gosport	2	Yes	221
„ 12th	Shorncliffe	1	Yes	265
„ 13th	Pembroke	2	Yes	307
„ 14th	Sheffield	2	Yes	504
„ 15th	Aberdeen	1	Yes	240
	Stirling	1	No	159
	Perth	*	No	117
Detachment	Isle of Man	*	No	38
Cavalry Depôt	Canterbury	2	Yes	545
Royal Horse Artillery.				
	Aldershot	1	Yes	199
Ditto, Depôt	Maidstone	1	No	200
Royal Artillery.				
1st Brigade	Halifax	1	No	126
2nd „	Mauritius	1	No	62
3rd „	Montreal	1	Yes	233
4th „	Toronto	1	No	236
5th „	Madras.			
6th „	Portsmouth	2	Yes	222
7th „	Woolwich.			
8th „	Bengal.			
9th „	Dublin	2	Yes	188
10th „	Malta	2	Yes	208
11th „	Woolwich			
12th „	Gosport	1	No	99
13th „	Plymouth	2	Yes	273
	Pembroke	1	No	101
14th „	Bombay			
15th „	Gibraltar	2	No	368
16th „	Bengal.			
17th „	Dover	3	No	209
18th „	Bombay.			
19th „	Bengal.			
20th „	Madras.			
21st „	Bombay.			
22nd „	Bengal.			
23rd „	Madras.			
24th „	Bengal.			
25th „	Ditto.			

* Library used as Recreation Room.

App. XI.

Regiment.	Where Stationed.	Number of Rooms.	Refreshment Bar.	Number of Subscribers, Mar. 31, 1869.
Detached Batteries - -	Alderney - -	1	No	78
	Aldershot -	1	No	178
	Ballincollig -	2	No	13
	Barbadoes -	2	No	59
	Bermuda - -	2	Yes	145
	Devonport -	2	No	116
	Dorchester -	1	Yes	144
	Fort George -	1	No	17
	Guernsey - -	1	No	64
	Hochelaga -	1	No	76
	Jamaica - -	1	No	85
	Jersey - -	1	No	73
	Kingston - -	2	Yes	159
	Leith Fort -	1	No	89
	London, C.W. -	1	Yes	145
	Newfoundland -	1	No	85
	Quebec - -	2	Yes	227
	Sheerness - -	2	Yes	447
	Shoeburyness -	1	No	184
	Shorncliffe -	1	Yes	292
	St. Helena -	2	No	99
	St. Helen's Island	2	Yes	51
	Tynemouth -	1	No	14
	Warley - -	2	Yes	208
	Woolwich—			
	Non-commis. officers -	1	No	728
	Gunners -	1	No	347
Royal Engineers.	Aldershot -	2	Yes	407
	Bermuda - -	1	No	116
	Chatham - -	2	Yes	650
	Curragh - -	2	Yes	142
	Dover - -	1	No	87
	Dublin - -	1	No	9
	Halifax - -	1	No	42
	King William's Town - -	2	Yes	80
	Malta - -	2	Yes	179
	Mauritius -	1	No	26
	Point Levis -	2	No	163
	Portsmouth -	1	No	65
	Southampton -	1	No	74
	Weymouth -	2	No	72
	Woolwich -	1	No	108
	Total - -	-	- -	64,650

LONDON:
Printed by George E. Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty.
For Her Majesty's Stationery Office.

ACCOUNT

OF THE

SYSTEMS OF MILITARY EDUCATION

IN

FRANCE AND PRUSSIA,

BY

THE SECRETARY.

PREFACE.

THE following Report upon the Military Schools of France and Prussia is based entirely upon the account of the system of military education in these countries, which accompanied the report of the Commissioners appointed in 1856 "to consider the best mode of reorganizing the system for training officers for the scientific corps." The arrangement of the subject adopted in that account has been followed throughout in the present report; in cases in which changes have not taken place, more particularly in the description of the Polytechnic and some of the other French schools, quotations have been freely made from it; and even when its actual words have not been quoted, use has been constantly made of the information contained in it. In fact, the present account is little more than a second edition of that of 1856, with such alterations as have been required to adapt it to the existing state of the French and Prussian military schools at the present time. A few questions, and more particularly that of discipline, have been treated at greater length than in the former account, as being of more immediate interest at the present moment with reference to the inquiries of the Royal Commission on Military Education.

It is necessary to acknowledge the assistance which was afforded by the French and Prussian governments in conducting the inquiry. Permission to visit the various educational establishments was most readily granted; and at the schools themselves in both countries the utmost courtesy was shown by the authorities. Every facility was afforded for obtaining an insight into the internal arrangements of the different institutions, and all documents and other information were most willingly furnished.

In visiting the French schools, much valuable information was afforded at the Polytechnic by General Favé, the commandant, Colonel Boissonnet, the second in command, and Colonel Riffault, the director of studies; at Metz, by Major Masselin, of the Engineers; at St. Cyr, by General de Gondrecourt, the commandant, and Major Duparcq, the director of studies; and at the Staff School, by Lieutenant-Colonel de Linage, the second in command, and Major Moujon, the superintendent of the practical instruction. Unfortunately, owing to the absence of Colonel Claremont from Paris, the advantage of his advice was not obtained; but every assistance was afforded by Captain Hore, the Naval Attaché to the Embassy; and Colonel Claremont has since been good enough to furnish answers to several questions on which information was requested from him.

In Prussia it is necessary to acknowledge in particular terms the kindness shown by General Von Peucker, Inspector-General of Military Education, and his Adjutant, Colonel Von Der Osten; by Lieutenant-General Von Holleben, President of the Supreme Military Examination Commission; by Lieutenant-General Von Etzel, Director of the War Academy; by Lieutenant-Colonel Von Dresky, Director of the Artillery and Engineer School; by Major-General Von Wartenberg, Commander of the Cadet Corps; by Lieutenant-Colonel des Barres, Commandant of the Berlin Cadet House; and by Lieutenant-Colonel Berger, Director of the War School at Hanover. General Von Holleben and Lieutenant-Colonel Berger had previously furnished much valuable information to the Commissioners of 1856 at the time of their visit to Prussia.

In conducting the inquiry into the Prussian system of education, the greatest assistance was rendered by Colonel Walker, Military Attaché to the Embassy at Berlin, both in supplying information and in affording the advantage of his company in visiting the various schools. Indeed, without the aid of Colonel Walker, it would have been impossible in the time at disposal to have obtained any satisfactory insight into the system of military education in Prussia. Several memoranda supplied by him have been embodied in the

general account of the Prussian Military System, and of the mode of admission to the army. A letter which he was good enough to furnish on the subject of early military education is printed at length in the Appendix (page 528), as affording, both from his own experience and from the opportunities he has had of ascertaining the views of distinguished Prussian officers, a valuable contribution in reference to one of the subjects of the inquiries of the Royal Commission.

The translations given in the Appendix of the courses of Permanent Fortification and of Construction in use at the French Artillery and Engineer School at Metz were supplied by the kindness of Captain Schaw, R.E., Professor of Fortification and Artillery at the Staff College.

JOHN W. HOZIER,
Lieutenant, Scots Greys,
Secretary to the Commission.

February 15, 1869.

MILITARY EDUCATION IN FRANCE.

Introductory Remarks.

The organization of the French army has recently undergone considerable modifications. Outline of the system of military service.

By the law of the 1st February 1868, the term for which the soldiers levied by yearly conscription are bound to serve is fixed at nine years. For the first five years they serve with their regiments; at the end of this period, in time of peace, they are discharged on furlough and pass into the reserve, to which they belong for the remaining four years of their term of service. While in the reserve they still continue to form part of the army, though performing no actual duty, and in time of war they are liable to be recalled to active service. At the end of four years in the reserve they receive their definitive discharge (*congé définitif*). The strength of the contingent to be levied by conscription each year is fixed by an annual vote. A conscript is permitted to obtain exemption from service by paying a fixed sum—at present 2,500 francs (90*l.*)—for which the State undertakes to provide a substitute.

The army is officered partly from the Military Schools, partly by promotion from the ranks. There is nothing in France corresponding to the English system of "direct commissions." No one can become an officer who has not either passed through a military school, or earned his commission by service in the ranks. Mode of officering the army;

One third of the commissions which fall vacant in each regiment are by law reserved for promotions from the non-commissioned officers of the regiment; one third belong to the military schools; the disposal of the remaining third is left to the sovereign. "In actual practice," as stated in the report of the Commissioners of 1856, "it is said that two-thirds "of the officers in the Artillery and Engineers are taken from "the pupils of the Polytechnic, and one-third only from the "ranks; in the line on the other hand about two-thirds are By a fixed proportion from the ranks, and from the military schools.

" promoted from the ranks, and one-third only have gone " through St. Cyr. But it must also be added that only a " very small proportion of those promoted from the ranks " rise above the rank of captain in any of the services." It appears also that there is at the present time a wish to increase the proportion of officers in the line who have had a professional education, and that their number is being constantly, though very gradually, augmented. In the Staff Corps, which in France exists as a distinct service by itself, all the officers have had a careful professional education, as admission to the corps can only be obtained by passing through a special preparatory school. The number of officers annually required to fill the vacancies in the line is about 600, though it of course varies according to circumstances; in the Artillery and Engineers the number appears to be about 120; 25 appointments are in general made each year to the Staff Corps.

Promotion from the ranks.

A young man entering the ranks must serve at least six months as a private soldier before he can become a corporal, and six months as corporal before being made a *sous-officier*. In the latter grade he must serve at least two years before promotion to the rank of sub-lieutenant. Hence, under the most exceptionally favorable circumstances, he cannot obtain a commission under a period of at least three years' service, and the length of service actually required is usually much greater. On the other hand, by those who pass successfully through a military school, the rank of sub-lieutenant is obtained after a residence of two years at the school.

Regulations for the promotion of officers.

The regulations for the promotion of officers have not been altered for many years, and are thus described in the report of the Commissioners of 1856.

" The promotion is partly by seniority (*ancienneté*) and " partly by selection (*choix*).

" The following regulations exist as to the length of ser- " vice in each rank before promotion can be given, during a " period of peace :—

" A sub-lieutenant cannot be promoted to	Lieutenant	under	2	years' service.
" A Lieutenant " to	Captain	"	2	"
" A Captain " "	Major	"	4	"
" A Major " "	Lieut.-Col.	"	3	"
" A Lieut.-Col. " "	Colonel	"	2	"

" But in time of war these regulations are not in force.

" Up to the rank of captain, two-thirds of the promotion " takes place according to seniority, and the other one-third " selection.

" From the rank of captain to that of major (*chef de bataillon
" ou d'escadron*) half of the promotion is by seniority, and
" the other half by selection, and from major upwards it is
" entirely by selection."

In the Cavalry and Infantry promotion by seniority is regimental up to the rank of captain; above that rank it is general through the respective arms. In the Staff Corps, the Artillery, and the Engineers, promotion in all ranks is general in each corps.

Grounds of selection for promotion.

A very careful system of confidential reports as to the professional capabilities of officers is carried out in France; these reports enter into extremely minute details, and it is believed that they in general exercise great influence in determining the selection of officers for promotion. There are no examinations for ordinary promotion in the French army; the only examinations which take place, apart from those at the military schools, are for admission to the department of the *Intendance Militaire*, which is thrown open to general competition among the captains of the army.

List of the military schools.

The principal military schools in France are as follows:

1. The Polytechnic school at Paris (*Ecole Impériale Polytechnique*)—at which a preparatory civil education, almost entirely of a mathematical character, is given to all who enter the Artillery and Engineers unless they rise from the ranks.

2. The School of Application for the Artillery and Engineers at Metz (*Ecole Impériale d'Application de l'Artillerie et du Génie*)—to which young men who select the Artillery and Engineers are sent, after leaving the Polytechnic, for a course of professional instruction, corresponding in some degree to that given both at the Royal Military Academy at Woolwich and the Royal Engineer Establishment at Chatham.

3. The Special Military School of St. Cyr, (*Ecole Impériale Spéciale Militaire*)—which educates officers for the Cavalry and Infantry, and corresponds to the Royal Military College at Sandhurst.

4. The Staff School at Paris (*Ecole Impériale d'Application d'Etat Major*)—corresponding generally to our Staff College, with this main difference—that the course of instruction at the *Ecole d'Etat-Major*, as a qualification for appointment to the Staff Corps, is passed by an officer on his first joining the army, and that admission to it is in practice almost entirely restricted to such officers as have previously passed through the school for the line at St. Cyr.

5. The Military School at La Flèche (*Prytanée Impérial Militaire*)—which is intended chiefly to provide a free education for the sons of officers in indigent circumstances and of non-commissioned officers who have been killed in action,

but gives no direct admission to the army without passing through one of the more special schools.

6. The Military Medical School—consisting of two branches:

(*a*) A preparatory school at Strasburg (*Ecole Impériale du Service de Santé Militaire*).

(*b.*) A school of application at Paris (*Ecole Impériale d'Application de Médecine, de Chirurgie et de Pharmacie Militaires.*)

7. The Cavalry School at Saumur (*Ecole Impériale de Cavalerie*)—mainly intended to train a certain number of regimental officers and non-commissioned officers of the Cavalry, Artillery, and Train, as instructors in riding. It partly corresponds to our Riding Establishment at Canterbury, though carried out on a very much more extensive scale.

8. The School of Musketry (*Ecole Normale de Tir*)—originally established at Vincennes, but now transferred to the Camp of Chalons.

9. The Gymnastic School (*Ecole Normale de Gymnastique*) near Vincennes.

10. The Regimental schools (*Ecoles Régimentaires*), of Cavalry, Infantry, Artillery, and Engineers.

Annual expenditure upon them.

The total yearly expense of these establishments, as extracted from the Budget for 1869, is 4,668,238 francs (or rather more than 186,700*l.*)—distributed as follows:

Name of School.	Sums charged to the Schools Estimate.	Military Pay charged to other Estimates.	Total
	Frs.	Frs.	Frs.
Polytechnic	719,673	85,515	805,188
Artillery and Engineer school at Metz	99,500	416,350*	515,850
St. Cyr	1,348,792	15,000	1,363,792
Staff school	99,000	214,870*	313,870
La Flèche	539,868	15,000	554,868
Medical school	659,300	†	659,300
Cavalry school at Saumur	227,000	18,500	245,500
Normal school of gymnastics, regimental gymnasia, and school of musketry.	36,270	„	36,270
Regimental schools	173,600	„	173,600
Total	3,903,003	765,235	4,668,238

* These sums include the pay of the officer students at these establishments, amounting to 288,000 frs. at Metz, and 103,000 frs. at the Staff School.

† The estimate for the Medical School appears to be exclusive of the pay of all military medical officers employed at the school, but the amount of this additional sum is not stated.

Cost to the State of the education of combatant officers.

Of these establishments the first five only are those immediately connected with the preparatory education of officers of the combatant branches of the service, and the present report will therefore be confined to a description of them.

Their annual *cost to the State*, after deducting the repayments received from the students, is shown in the following table :—

Name of School.	Total Expense as given in the previous Table.	Repayments from Students.	Annual Cost to the State.	Number of Pupils estimated for.
	Frs.	Frs.	Frs.	
Polytechnic - -	805,188	237,000	568,188	290
Artillery and Engineer school at Metz.	515,850	Nil.	515,850	180
St. Cyr - - -	1,363,792	622,500	741,292	600
Staff school - -	313,870	Nil.	313,870	50
La Flèche - -	554,868	97,000	457,868	400 (300 *boursiers*, 100 *demi-boursiers*.)
Total - -	3,553,568	956,500	2,597,068	1,520

In order to establish a comparison with the cost of the military schools in England, there must be deducted from the above total sum of - - - - 2,597,068frs.
The regimental pay of the officer students at Metz and the Staff School, amounting
At Metz to - - - - 288,000 frs.
At the Staff School to - - 103,000 „
391,000 „
2,206,068 „

Making the total annual sum spent on the preparatory education of officers 2,206,068 frs., or rather more than 88,200*l*. It must be remembered, however, that all the pupils at the Polytechnic and La Flèche do not enter the army, so that the whole of this sum cannot be said to be exclusively devoted to purposes of military education.

Annual cost of the education of a student at each school.

Taking the estimated expenditure for 1869 as a fair average in time of peace, the annual cost to the State of a student at each of these schools, after deducting the repayments made by the pupils, and the regimental pay of the officer students at Metz and the Staff School, appears to be as follows :—

		£	s.	d.
At the Polytechnic,	about 1,960 frs., or -	78	8	0
At Metz - -	„ 1,260 „ „ -	50	10	0
At St. Cyr - -	„ 1,235 „ „ -	49	8	0
At the Staff School	„ 4,217 „ „ -	168	13	0
At La Flèche -	„ 1,145 „ „ -	45	16	0

Course for the various services.

Officers intended for the Artillery and Engineers go through a two years' course of preparatory instruction at the Polytechnic, after which they spend two further years at the School of Application at Metz; candidates for the Staff Corps, in the great majority of instances, similarly pass two years at St. Cyr, and two years subsequently at the Staff School; those who enter the Cavalry and Infantry complete their military education with a residence of merely two years at St. Cyr.

It follows, therefore, that the cost to the State of educating an officer for the different branches of the service is approximately:—

For the Scientific Corps (four years' instruction) -	£257
For the Staff Corps (four years ditto) - -	436
For the Line (two years' ditto) - - - -	99

Assistance afforded by the State to candidates for commissions.

A considerable portion of the sum annually devoted to military education in France is employed in affording State assistance to the candidates who have obtained admission to the schools. Exhibitions (*bourses*) and half-exhibitions (*demi-bourses*) are freely granted to those whose circumstances require such assistance. The exhibitions consist, not in the grant of an actual sum of money, but in the provision of a gratuitous or partially gratuitous education. Free outfits on first admission to the school are also in many cases granted; and a pecuniary allowance is also sometimes made to students in poor circumstances who have completed their education on their entrance into the army. It is remarkable, however, that the concession of this support from the State is not in any way made the reward of superior ability, but is determined solely by the circumstances of the candidate. Every one who succeeds in the open competitive examination for admission to the Polytechnic or St. Cyr is entitled, if his circumstances are proved to be such as to require assistance, either to a partial or entire support from the State; at La Flèche the education given to three-fourths of the pupils is wholly gratuitous, and to the remainder partially so.

THE POLYTECHNIC SCHOOL.

(*Ecole Impériale Polytechnique.*)

General Account.

The early history of the Polytechnic school, the important part played by the establishment in the general system of education in France, and the results of the method of instruction followed at it, are fully described in the Report

of the Commissioners of 1856. It is, therefore, unnecessary to enter upon these subjects, and the present account will be confined, as far as possible, to a consideration of the school in its connexion with military education. It must, however, be premised that the Polytechnic cannot in any respect be called an exclusively military school. It is indeed the preparatory school for the scientific branches of the French army, and a considerable majority of its pupils enter the Artillery or Engineers, while a very small number (not exceeding three annually) pass into the Staff Corps; but it is also at the same time a preparatory school for the civil service, various important departments of which are exclusively supplied by it. As stated in the Report of the Commissioners of 1856, "The Polytechnic is a preparatory and general scientific "school: its studies are not exclusively adapted for any one "of the departments to which at the close of its course the "scholars will find themselves assigned; and on quitting it, "they have, before entering on the actual discharge of their "duties of whatever kind, to pass through a further term of "teaching in some one of the schools of application specially "devoted to particular professions."

Mixed civil and military character of the Polytechnic.

A school of preparation for the civil service as well as for the army.

The public services for which it thus gives a general preparation, and the average number of appointments which are made to each annually, are as follows:—

Branches of the public service to which it gives admission.

No. of Annual Appointments.	Service.	
	Military.	
50	Artillery (*Artillerie de terre*)	*Under the Minister of War.*
25	Engineers (*Génie*)	
3	The Staff Corps (*Corps d'état-major*)	
	Naval.	
5	The Navy (*Marine*)	*Under the Minister of Marine.*
10	Marine Artillery (*Artillerie de Mer*)	
4	Naval Architects (*Génie Maritime*)	
1	The Hydrographical Department (*Corps des Ingénieurs Hydrographes*)	
	Civil.	
18	The Department of Roads and Bridges (*Ponts et Chaussées*)	*Under the Minister of Public Works.*
3	The Department of Mines (*Mines*)	
1	The Telegraph Department (*Lignes Télégraphiques*)	*Under the Minister of the Interior.*
1	The Department of Powder and Saltpetre (*Poudres et Salpêtres*)	*Under the Minister of Finance.*
2	The Tobacco Department (*Administration des Tabacs*)	

To these may be added any other departments of the public service which require an extensive knowledge of mathema-

tics, physics, or chemistry. The school itself is under the control of the Minister of War.

Admission to the school.

Admission to the school is determined by a competitive examination, which is held yearly in the chief towns of France by a Board of Examiners, who pass through the country for this purpose. Every French youth who is above 16, and not more than 20, on the 1st of January of the year in which the examination is held, may present himself as a candidate. Non-commissioned officers and soldiers who have served two years in the army are admitted as candidates between the ages of 20 and 25. Very few, however, present themselves; there are at present two pupils of this class in the school, and there were two or three last year. They are generally those who as civilians have failed in obtaining admission to the school, and have subsequently entered the army. The number of admissions is determined yearly by the Minister of War with reference to the probable number of vacancies in the public services. The ordinary number of pupils admitted each year is 150; they enter the school on the 1st of November.

Payments.

"The annual charge for board and instruction is 40*l.* "(1,000 frs.) In addition there is the cost of outfit, varying "from 20*l.* to 24*l.* Exhibitions, however, for the discharge "of the whole or one-half of the expense (*bourses et demi-* "*bourses*) are awarded by the State in favour of *all* the suc- "cessful candidates whose parents can prove themselves to "be too poor to maintain their children in the school."* From one-fourth to one-third of the pupils at the school are generally in receipt of these *bourses*. Outfits and half-outfits (*trousseaux* and *demi-trousseaux*) are also sometimes granted. This allowance, however, is very rarely made, the outfit being generally paid for by the pupil.

Duration of the course of instruction.

Appointment to the public services.

"The course of study is completed in two years. On its "successful termination, which is preceded by a final exami- "nation, the students are distributed into the different "services, the choice being offered them in the order of "their merits, as laid down in the classified list drawn up "after the examination. Students who have been admitted "into the school from the army are obliged to re-enter the "army. All others have the right of choosing, according to "their position on the list, the service which they prefer, "so far, that is, as the number of vacancies in that service "will allow; or they may if they please decline to enter the "public service at all."* By the regulations of the school, those who qualify in the final examination, but for whom

* Report of the Commissioners of 1856.

there may not be vacancies in the services ordinarily recruited by the school, are appointed sub-lieutenants either in the cavalry, infantry, or navy. In practice, however, this regulation is a dead letter, and will probably before long be abolished. The pupils never accept such appintments, but prefer to try their chance in civil life. As a matter of fact, indeed, there are almost always vacancies sufficient for those who qualify in the examination.

Number of pupils.

The number of pupils at the school seldom much exceeds 270, for though 150 candidates are on an average accepted yearly in the entrance examination, resignations and casualties from illness or other causes generally diminish the number who remain to go through the course. Their ordinary age at the time of admission is about 19, and very few appear to enter earlier than 18. The pupils admitted each year form a division by themselves; the pupils of the first year are called the junior, those of the second year, the senior division. For all purposes of instruction the two divisions are kept entirely separate.

Age at admission.

Organization and Establishment.

Military organization of the school.

The organization of the school, which is fixed by a Decree dated the 30th November 1863, is of a military character. There is a staff of military officers in addition to, and quite separate from, the staff employed in the duties of instruction. The pupils wear uniform, which, however, is more civil than military in appearance; they are formed into four companies which together constitute a battalion; and, although they are not actually subject to the penal code of the army, the discipline maintained and the punishments inflicted are entirely military in character.

Establishment.

There have been few changes in the establishment of the school since the Report of the Commissioners of 1856. For the number of pupils, which scarcely ever at the present time amounts to 300, the institution still "besides its mili- "tary staff employs no less than 39 professors and teachers; "it has four Boards of Management, and 10 scientific men "unconnected with the school, and amongst the most dis- "tinguished in France, conduct its examinations."*

Military staff.

The military establishment remains exactly as it was in 1856, and consists of:

The Commandant, a General Officer, usually of the Artillery or the Engineers, at present a General of Artillery.

* Report of the Commissioners of 1856.

A Second Commandant, a colonel or lieutenant-colonel, chosen from among the former pupils of the school; at present a colonel of Engineers.

Three captains of Artillery and three captains of Engineers, as inspectors of studies, chosen also from former pupils of the school.

Six adjutants (*adjudants*), non-commissioned officers, usually such as have been recommended for promotion.

Civil staff.

Some slight changes have been made in the civil establishment; it now consists of:—

1. A Director of Studies, at present a colonel of Engineers.

2. Seventeen professors,* seventeen *Répétiteurs* and assistant *Répétiteurs*, and five drawing masters. Of the 17 professors, two are at present officers of Engineers, and one an officer of Artillery; the remainder are civilians, of whom three are members of the Academy of Sciences.

3. Five examiners for admission, and five for conducting the examinations at the school. All of these at present are civilians.

4. An administrative staff consisting of a treasurer, librarian, &c.; and a medical staff.

Appointment of officers and professors.

There is no fixed limit to the tenure either of the appointments on the military staff or of the professorships. In practice, however, the Second Commandant seldom holds his appointment more than four or five years, and the captains are generally changed every three or four years. In appointing the latter, regard is said to be paid to the tact they are likely to display in the management of the pupils; they receive an addition of one-third to their regimental pay. The Director of Studies, the examiners who conduct the examinations at the school, and the professors are appointed by the Emperor on the recommendation of the Minister of War, and hold their appointments for an unlimited period. The examiners for admission to the school are only appointed for three years, and the *Répétiteurs* for one year; practically, however, in both cases the same individuals are almost invariably re-appointed on the expiration of these periods. It seems to be thought that frequent changes of the examiners would be a disadvantage. In the case of all appointments to the Educational Staff the *Conseil de Perfectionnement* of the school selects two candidates from those who offer themselves

* In 1856 there were only 15 professors; there are now two additional professors for history, the study of which has been recently introduced at the school.

and lays their names before the Minister, who decides between them.

Governing boards.

The following account of the arrangements for the general management of the school is taken from the Report of the Commissioners of 1856, with some slight alterations to suit the modifications which have been recently introduced.

The general control or supervision of the school is vested, under the War Deparment, in four great boards or councils, viz.:—

Board of administration.

1. A Board of Administration, composed of the Commandant, the Second Commandant, the Director of Studies, two professors, two captains of the military staff, and two members of the administrative staff. This board has the superintendence of all the financial business, and all the minutiæ of the internal administration of the school.

Board of discipline.

2. A Board of Discipline, consisting of the Second Commandant, the Director of Studies, three captains of the Military Staff, and one major of the army, selected from former pupils of the school.* The duty of this board is to decide upon cases of misconduct.

Board of instruction.

3. A Board of Instruction, whose members are, the Commandant, the Second Commandant, the Director of Studies, the Examiners of Students, the Professors, and two captains of the Military Staff; and whose chief duty is to make recommendations relating to ameliorations in the studies and the programmes of admission and of instruction in the school to—

Board of improvement, (*Conseil de Perfectionnement.*)

4. A Board of Improvement (*Conseil de Perfectionnement*), charged with the general control of the studies, and formed of:—

The Commandant, president,
The Second Commandant,
The Director of Studies,
Two delegates from the Naval Department,
Two delegates from the Department of Public Works,
One delegate from the Home or Finance Department,
Three delegates from the War Department,
Two members of the Academy of Sciences,
Two examiners of students,
Three professors of the school.

The delegates from the public departments are appointed by the respective ministers; the members of the Academy, the examiners, and the professors are selected by the Minister of War. The real management of the school, so far as the

* Formerly two professors of the school were also members of the Council of Discipline, but the professors have now no voice in matters of discipline.

Great influence of the *Conseil de Perfectionnement.*

course of instruction is concerned, is in the hands of the *Conseil de Perfectionnement;* it will be seen that of the 18 members composing it more than half are entirely independent of the school, and are men of eminence in the various public services for which the instruction at the Polytechnic is preparatory. One of the chief duties of the Council is to see that the studies form a good preparation for those of the more special schools (*Ecoles d'Application*) for the civil and military services; and the eminent character of its members gives great weight to the recommendations they make to the Minister of War.

The annual expenses of the school, as extracted from the Budget for 1869, are as follows:—

	Francs.	Francs.
Pay of staff, professors, &c. - - -		331,850
Instruction, maintenance, examination of candidates, clothing, books, &c. - - -		321,073
Outfits for 30 new pupils at 600 francs each	18,000	
Allowances (*premières mises*) to 25 exhibitioners on admission to the military services at 750 francs each - -	18,750	36,750
Maintenance and repair of buildings - -		30,000
Total sum charged in the schools estimate -		719,673
Add regimental pay of 28 officers and non-commissioned officers employed at the school -		85,515
Total expenditure - - -		805,188
Deduct repayments from pupils - - -		237,000
Cost to the State - - -		568,188

Or about 22,720*l.*

Entrance Examination.

The mode of conducting the entrance examination is so fully described in the Report of the Commissioners of 1856 that it will be unnecessary to give more than a very brief outline of its general features, noticing such changes as have been since made. The conditions of admission to the examination are:—

Conditions of admission to the entrance examination.

1. All candidates must be by birth or naturalization French.

2. All candidates (unless they are serving in the army) must have been at least 16 and not more than 20 years of age on the 1st of January preceding.

3. Privates and non-commissioned officers of the army must be above 20 and under 25 years of age, must have served two years, and produce certificates of good conduct.

Subjects of examination.

The subjects of examination are founded upon the course of instruction in the *Lycées*, or ordinary civil schools of France. The majority of them are mathematical, comprising arithmetic, plane and solid geometry, algebra, plane and spherical trigonometry, analytical geometry of two and three dimensions, and descriptive geometry, including the theory of projection. In addition, the candidates are examined in physical science, including mechanics, hydrostatics, statical electricity, and magnetism; in chemistry (confined to the metalloids); in French composition; in German; and in geometrical and figure drawing. They also have to give in certain drawings and plans which must be attested as having been executed by them during the current year. All the subjects are obligatory, and no extra subjects can be taken up. Formerly a candidate was allowed at his option to present himself for examination in Latin, but this is no longer the case. One of the conditions of admission until lately required was that a candidate should have taken the degree of Bachelor of Sciences at a Lycée; this degree was considered to be a proof that he had a thorough knowledge of elementary arithmetic and geometry, which then did not form part of the examination. The exaction of this condition was not found to answer the purpose for which it was intended; it is, therefore, no longer required, and the candidates are now examined in arithmetic and geometry.

Mode of conducting the examinations.

"The examination is partly written and partly oral. It "is not public, but conducted in the following manner:—

"Five examiners are appointed by the Minister of War, "to examine the candidates at Paris, and at the several "towns named for the purpose throughout France.

"Two of these examiners conduct what may be called a "preliminary examination (*du premier degré*), and the other "three a second examination (*du second degré*). The preli- "minary examiners precede by a few days in their journey "through France those who conduct the second examina- "tion. The written compositions come before either.

"The preliminary examination (*du premier degré*) is made "solely for the purpose of ascertaining whether the candi- "dates possess sufficient knowledge to warrant their being "admitted to the second examination; and the second ex- "amination serves, in conjunction with the written compo- "sitions, for their classification in the order of merit."*

* Report of the Commissioners of 1856.

System of marks.

In estimating the comparative merits of the candidates, a system of marking is adopted which is employed in all the French military schools, and a description of which will apply to all other examinations that may be hereafter noticed. No fixed number of marks is, as with us, attached to each subject, but a scale of merit from zero up to 20 is employed to express numerically the estimate of the candidate's ability in each. The actual signification of the various numbers on the scale varies slightly at the different schools, but the principle in all cases is the same. The scale of merit in use at the Polytechnic is as follows:—

Scale of merit employed.

20	denotes	perfect.
19, 18, 17	„	very good.
16, 15, 14	„	good.
13, 12, 11	„	passable.
10, 9, 8	„	middling.
7, 6, 5	„	weak.
4, 3, 2	„	insufficient.
1, 0	„	nothing.

The examiners assign to every candidate a number on this scale for each oral reply, written composition, or drawing, and the mean of these numbers *in each of the separate subjects of examination* represents the general mean credit obtained by the candidate in that particular subject. The relative importance of the various subjects of examination is expressed by numbers which are termed "co-efficients of importance," (*co-efficients d'importance*); and the total number of marks gained by a candidate in each subject is determined by multiplying his general mean credit in that subject by the co-efficient of importance attached to it.

Co-efficients of importance.

The co-efficients of importance of the various subjects in the entrance examination to the Polytechnic are as follows:

1. Vivâ voce examination:	
Algebra and analytical geometry - -	52
Arithmetic, geometry, and trigonometry - -	50
Physics and chemistry - - - -	40
2. Paper-work:	
Mathematical paper - - - -	15
Descriptive geometry - - - -	13
Solution of triangles and logarithmic calculations -	5
French composition - - - -	14
Drawings - - - - -	16
German - - - - -	5

Classification founded upon the examination.

After the conclusion of the examinations a Board composed, in addition to the five examiners, of the commandant and certain other officials of the Polytechnic, draws up a list of the candidates arranged in order of merit. This list is submitted to the Minister of War, and the number of candidates for whom there are vacancies are admitted to the school in the order in which they stand on the list. One-tenth more than the number that will actually be required for the public services are generally admitted; so that the mere fact of admission to the school, or even of passing the final examination at it, does not, as a matter of course, ensure an appointment in the public service.

Admission of foreigners.

A certain number of foreigners are allowed, on passing a qualifying examination, to attend the course of study at the school as day scholars; but no foreigner can be admitted as a boarder in the establishment.

The Buildings and daily Routine.

An acquaintance with the internal arrangements of the school is almost necessary to a proper understanding of the mode of life and method of study followed at it. The following description of the school buildings is therefore extracted from the report of the Commissioners of 1856:—

The school buildings.

"The Polytechnic school stands near the Pantheon, and
" consists of two main buildings, one for the official rooms
" and the residence of the commandant and director of
" studies, the other and larger one for the pupils. Detached
" buildings contain the chemical lecture room and labora-
" tory, the laboratory of natural philosophy, the library,
" fencing and billiard rooms.

The refectories, lecture rooms, and museums.

" The basement floor of the larger building contains the
" kitchen and refectories. On the first floor are the two
" amphitheatres or great lecture rooms, assigned respec-
" tively to the pupils of the two years or divisions, in
" which the ordinary lectures are given. The rooms are

" large and well-arranged; the seats fixed, the students' " names attached to them. The students are admitted by " doors behind the upper tier of seats; at the foot of all is a " platform for the Professor, with a black board facing his " audience, and with sufficient room for a pupil to stand and " work questions beside him. Room also is provided for one " of the captains, inspectors of studies, whose duty is to be " present, for the director of studies, whose occasional presence " is expected, and for the assistant-teachers or *répétiteurs*, who " in the first year of their appointment are called upon to " attend the course upon which they will have to give their " subsequent questions and explanations. On this floor are " also the museums, or repositories of models, instruments, " machines, &c., needed for use in the amphitheatres, or " elsewhere.

The *salles d' interrogation.*

" The whole of the second floor is taken up with what are " called the *salles d'interrogation*, a long series of small cabi- " nets or studies, plainly furnished, devoted to the *inter-* " *rogations particulières*, which will presently be described.

The halls of study.

" The third floor contains the halls of study, *salles d'étude*, " or studying rooms, in which the greater part of the student's " time during the day is passed—where he studies, draws, " keeps his papers and instruments, writes his exercises, and " prepares his lectures. These are small chambers, contain- " ing generally seven or eight occupants. A double desk " runs down the middle from the window to the door, with a " little shelf and drawers for each student. There is a black " board for the common use, and various objects are furnished " through the senior student, the sergeant—a selected pupil " —more advanced than the rest, who is placed in charge of " the room, and is responsible for whatever is handed in for " the use of the students. He collects the exercises, and gene- " rally gives a great deal of assistance to the less proficient.

" These chambers for study are arranged on each side of " a long corridor which runs through the whole length of " the building, those of the juniors being separated from " those of the seniors by a central chamber or compartment, " the *cabinet de service*, where the officers charged with the " discipline are posted, and from hence pass up and down " the corridor, looking in through the glass doors and seeing " that no interruption to order takes place.

The dormitories.

" The fourth story is that of the dormitories, airy rooms, " with 10 or 12 beds in each. These rooms are arranged " as below, along the two sides of a corridor and divided in " the same manner into the senior and junior side. A non- " commissioned officer is lodged at each end of the corridor, " and one in the centre, to see that order is kept."

The daily hours of work are from half-past 6 to 2, with an interval of half an hour for breakfast, and again from 5 to 9 in the evening—in all 11 hours a day. The more severe subjects of study are the occupation of the morning; the lighter studies, which involve less head work, are chiefly done in the evening. The only free time which the pupils have is after dinner from half-past 2 until 5, and even this is occasionally occupied with drill. Wednesday is a half-holiday, and on that day the students are allowed to go out after 2 and remain out until 10. On Sunday they are free the whole day after 9 in the morning. Except on Sundays and Wednesdays they are not allowed to leave the school. The ordinary routine of the day's work is as follows:—The pupils rise at 6; at half-past 6 they attend roll-call, after which for two hours they are occupied in study in the *salles d'étude*, under the supervision of the officers charged with discipline, preparing for the day's lecture. They breakfast at half-past 8; at 9 there is daily, with the exception of one day in the week, a mathematical lecture in the amphitheatre for the students of each division, which lasts until half-past 10. All the students of a division, about 140 in number, attend lecture together, and every individual is required to take notes in the lecture room. "The first half hour of the hour and a half assigned to each "lecture is occupied with questions put by the professor "relating to the previous lecture. A name is drawn by lot; "the student on whom the lot falls is called up to the black-"board at which the professor stands, and is required to "work a problem and answer questions. The lecture con-"cluded, the pupils are conducted to the *salles d'étude*, where "they are to study. Here for one hour they devote them-"selves to completing and writing out in full the notes of "the lecture they have just heard. The professor and his "assistants, the *répétiteurs*, are expected to follow and make "a circuit through the corridors to give an opportunity to "ask for information on any difficult points in the lecture. "A lithographed summary of the substance of the lecture, "extending perhaps to two octavo pages, is also furnished to "each studying room for the use of the pupils."* The time devoted to this revision of the subject of the lecture extends to half-past 11. From half-past 11 until 1 there is on two days in the week another lecture, either on physics or chemistry, followed, like the mathematical lecture, by an hour devoted to the completion of notes. On the other days of the week, on which there is no lecture, two hours and a half, from half-

General distribution of time.

Daily routine.

Morning lecture on mathematics.

Followed by study on the subject of the lecture.

* Report of the Commissioners of 1856.

Drawing.

Dinner, recreation, and evening studies.

past 11 until 2, are spent in the *salles d'étude*, where the pupils are occupied either in study or in geometrical and scientific drawing. Occasionally a certain number are employed during this time in manipulations in chemistry or physics. At 2 dinner takes place, after which the pupils, except on days when drill is ordered, are free to amuse themselves as they please (without, however, leaving the school buildings) until 5. At 5 the evening work commences. From 5 to 7 the pupils are on most nights variously engaged—some at German lessons, some studying in the *salles d'étude*, others undergoing those private examinations by the *répétiteurs* (*interrogations particulières*) which form so peculiar a feature of the Polytechnic system of instruction. Occasionally a lecture on history or French literature takes place at this time. From 7 to 9, two hours more are spent in the *salles d'étude*, either in landscape and figure drawing, in French composition, or in general study. At 9 there is supper; at half-past 9 roll-call takes place in the dormitories, and at 10 all lights are put out.*

Amusements.

During the free time in the afternoon the students generally occupy themselves either in fencing, gymnastics, or billiards. Billiard-tables are provided in the recreation rooms, and in fact appear to be the only means of amusement in these rooms; no newspapers are allowed, and the only reading room is the school library, to which the students are admitted during the hours of recreation.

Method of Instruction.

Characteristic features of the method of instruction.

There has been no change in the general character of the method of instruction at the Polytechnic since 1856. Professorial lectures delivered to large numbers, but supplemented by daily questioning of the pupils in the lecture room—enforced study under close supervision—frequent examinations by the *répétiteurs* at short intervals—the plan of assigning marks for the work of all kinds which is done from day to day—and the encouragement of intense competition among the pupils—still form the salient features of the method pursued. One of its chief peculiarities is the *repetitorial* system, "a method of teaching," to use the words of the Report of the Commissioners of 1856, "almost peculiar to "France, and which may be described as a very able com- "bination of professorial and tutorial teaching. The object "of the *répétiteur*, or private tutor, is to second every lecture

The repetitorial system.

* Tables of the daily arrangement of the studies will be found in the Appendix, page 441.

" of the professor, to explain and fix it by ocular demon-
" strations, explanations, or examination. The *répétiteurs*
" form a class of teachers more like the highest style of
" private tuotrs in our universities, or what are called in
" Germany *Privat-docenten,* than any other body,—with this
" difference, that they do not give their own lectures, but
" breaking up the professor's large class, examine the
" pupils in *his* lecture. The French make it their first
" object to secure one able principal teacher in each subject,
" a professor whom they burden with very few lectures.
" And to meet the educational difficulty thus created, to
" keep the whole large class of listeners up to the prescribed
" point, they call in this numerous and busily employed
" corps of assistants to *repeat,* to go over the professor's
" work afresh, to whip in, as it were, the stragglers, and
" hurry up the loiterers. It seems to have been one
" special object pursued in the Polytechnic to give to the
" professorial plan of instruction, so lax in itself, the utmost
" possible stringency, and to accumulate upon it every
" attainable subsidiary appliance, every available safeguard
" against idleness. Questions are expressly put *vivâ voce* by
" the professor before his lecture; there is a subsequent hour
" of study devoted to the subject; there is the opportunity
" for explanation to individual students; the exaction of
" notes written out in full form; the professor also gives
" exercises to the students to write during their hours of
" general study, which he examines and marks; general
" *vivâ voce* examinations (*interrogations générales*) conducted
" by the professor and *répétiteurs* follow the termination of
" certain courses of lectures; and lastly, one of the most
" important and peculiar parts of the method, we have what
" are called the *interrogations particulières.*" In addition to
the daily examinations by the professor in the lecture-room,
the pupils are subjected after every five or six lectures in
each subject to further examination by one of the *répétiteurs.*
These examinations (*interrogations particulières*) take place
in the small rooms already described as the *salles d'inter-*
rogation. Each pupil is taken singly in private by the
répétiteur, and for a period of about a quarter of an hour is
subjected to close questioning in the subjects of the preceding
lectures. These *interrogations* are continually going on;
they take place almost every evening in the week between
five and seven, and no notice is given until the afternoon of
the day itself to the students who are to be called up for
examination on any particular evening.

The professorial lectures supplemented by questioning;

Compulsory study;

Written exercises;

Constant examinations.

The *interrogations particulières.*

The system pursued is almost entirely one of enforced

Entire absence of private study.

study, and little is left to the students' own voluntary action. The *salles d'étude* play a very important part in the method of instruction. All work, of every kind, whether it consists of preparation for or revision of the subjects of lecture, of drawing, of mathematical exercises set by the professors, or of written compositions, is done in these rooms under the surveillance of officers specially charged with the duty of enforcing application to study. Such a thing as working in private is unknown and indeed is impossible, as no facilities are afforded for it. Even the choice of subjects of study is rarely left to the student's own option; each attendance in the *salles d'étude* is almost invariably assigned to the study of certain fixed subjects, and during the time so allotted no pupil is permitted to occupy himself with any other work, although connected with the general course of instruction. It is only occasionally that opportunity for general study (*étude libre*) of such subjects as the pupils choose is afforded to them.

Stimulus of the system of marks.

A very powerful aid to the method of instruction is afforded by the keen competition among the students themselves, which is much stimulated by the system adopted of assigning marks for all the current work that is done during the two years' course. "The order of the class list," to quote again from the former report, "is not solely determined by "success in the examination after which it is drawn up, but "by the result of previous trials and previous work during "the whole stay at the school. For during the whole time "every written exercise set by the professor, every drawing, "the result of every *interrogation particulière* by the *répétiteurs*, and of each general interrogation by the professors "and *répétiteurs*, is carefully marked, and a credit placed "accordingly to the name of the student, and reserved for "his benefit in the last general account. The marks "obtained in the examination which closes the first year "of study form a large element in this last calculation. The "student, it would seem, must feel that he is gaining or "losing in his banking account, so to call it, by every day's "work; every portion of his studies will tell for or against "him in the final competition upon which so much depends." The keen competition which exists, however, is said not to give rise to any bad feeling among the students; the spirit of *camaraderie*, which so strongly distinguishes the old pupils of the Polytechnic in after life, appears to be no less strong at the school itself.

All work done during the two years affects the final examination.

Course of Instruction.

Modifications made since 1856.

The changes which have been introduced in the course of instruction since 1856 are more in matters of detail than in

principles. The time allotted to study in each year has been somewhat shortened, apparently from a conviction that the course of study as it formerly existed was too exhausting; and the vacations have been increased from two to three months yearly. The programmes of instruction have been in some cases modified, and a more literary element has to some extent been introduced by the adoption of history as a subject of instruction. But the general course of study has not been made either less abstract or more specially preparatory to the military service; no purely professional subjects of instruction have been introduced. Topographical drawing is only practised so far as is necessary to acquire expertness in the conventional signs ordinarily employed; only two lectures are devoted to this subject in the course of two years; and the pupils are not exercised in sketching or surveying on the ground. "Military art" indeed forms the subject of a short course of lectures, but it is taught merely in the most general manner, the object of the course being more to afford such an explanation of technical military terms as may be useful to a civilian, than to impart scientific military instruction. Moreover this subject has no influence on the final classification of the pupils, no marks being assigned for proficiency in it; notwithstanding which it is noticed as a remarkable fact that the pupils show extreme interest in it, and have even expressed a wish that a fuller course of lectures might be given.

The military character of the studies has not been increased.

It cannot be too distinctly borne in mind that, regarded as an educational establishment, the Polytechnic cannot in any sense be called a *military* school. Indeed, although between two-thirds and three-fourths of its pupils enter the army, yet apart from its military organisation and staff there is nothing professional in the character of the institution. As the Director of Studies more than once remarked, the course of study at the Polytechnic is "a great intellectual exercise," preparing the mind for the practical and professional instruction which is afterwards given in the Schools of Application for the various services. To afford a training to the mind is the great object constantly kept in view, and mere modifications in the details of the programmes of study do not make any change in the general principles of the instruction. The school itself is a sort of mathematical university, a degree at which is a necessary condition of admission to certain departments of the naval, military, and civil services; and though the institution is actually under the Minister of War, it might with equal propriety (to use the words of the Director of Studies) be under the Minister of the Interior.

The Polytechnic not a military training school;

but a general scientific school.

Recent changes in the course of study.

The chief changes that have been made in regard to the course of instruction since 1856, may be summarised as follows:

Exclusion of elementary chemistry and physics.

1. The more elementary portions of chemistry and physics which are required in the entrance examination, but which were formerly repeated at the school, have been omitted. The course of instruction in these subjects is now confined to the more advanced portions which do not enter into the entrance examination.

Abridgment of the mathematical and certain other courses.

2. The mathematical courses have in some points been slightly curtailed, and the number of lectures in French literature and German have been diminished. By the modifications thus made in the programmes, it has been found possible to shorten the whole course of study and to increase the length of the vacations.

Less importance attached to military art.

3. The subject of "Military Art" which formerly entered into the final examination is no longer taken into consideration in determining the order of merit of the pupils. In this respect the course of instruction may be said to have even less of a military character than formerly. Topographical drawing is the single military subject which has any influence on the final classification of the pupils, and this only to a very slight extent.

Introduction of history.

4. History has been introduced as a subject of instruction. This change was made in 1862. The course comprises general history, both ancient and modern, but more especially the history of France in modern times. The introduction of this subject appears to have arisen partly from a feeling that an acquaintance with history was a necessary element of a liberal education, and partly from a wish to meet, to some extent, an objection often made to the Polytechnic course of instruction, that it was too deficient in studies of a literary character. History, however, like military art, is evidently still regarded as a subject of only secondary importance and has no influence on the final classification.

Reduction in the number of examinations.

5. A diminution has been made in the number of examinations during the course, by the suppression of one of the half-yearly examinations by the professors (*interrogations générales*, as distinct from the *interrogations particulières*) in each year. Further reference will be made to this point when speaking of the examinations at the school.

6. The importance of written exercises in determining the respective merits of the pupils has been decreased, apparently from the difficulty of establishing a security that such compositions were the unaided work of the individual. Diminished importance of written exercises.

The following table shows the present course of instruction during the two years, and the alterations which have been made in the number of lectures in each subject since 1856 :— Subjects of study in each year.

Subject.	Number of Lectures at present.	Number of Lectures in 1856.
First Year's Course.		
Analysis { Differential calculus	25	28
Analysis { Integral calculus	18	20
Descriptive geometry and geometrical drawing	32	38
Mechanics and machinery	40	40
Physics, comprising heat and electricity	30	34
Chemistry:—The metals	30	38
Astronomy and geodesy	30	35
French composition and literature	25	30
History	25	0*
German	25	30
Figure and landscape drawing	48	50
Second Year's Course.		
Analysis:—Integral calculus	32	32
Stereotomy:—Geometrical drawing of constructions in timber and masonry.	28	32
Mechanics:—Dynamics, hydrostatics, and machinery	40	42
Physics:—Acoustics, optics, and heat	30	36
Chemistry:—Continuation of the metals, and organic chemistry.	30	38
Architecture and buildings, construction of roads, canals and railways.	40	40
French composition and literature	25	30
History	25	0*
German	25	30
Military art	20	20
Topography	2	10
Figure and landscape drawing	48	48

* Introduced in 1862.

In connexion with several of the courses, such as descriptive geometry, stereotomy, machinery, and architecture, much drawing is done by the pupils; hand sketches are taken of the diagrams shown in the lecture room, and finished drawings are afterwards executed in the *salles d'étude*. In addition to this, 30 attendances of two or three hours each, distributed over the two years, are especially devoted to drawing more elaborate plans and elevations of architectural constructions Amount of time spent on drawing.

Manipulations in the laboratory.

Visits to manufacturing establishments.

and machinery. The practical applications of the theoretical instruction are limited to manipulations in the laboratory in connexion with the course of lectures on chemistry and physics. Towards the close of the second year the pupils are also taken to visit some of the large manufacturing establishments in Paris, in order to gain a practical acquaintance with machinery.

All the subjects taught at the school are obligatory, but history and military art, as already stated, have no influence in determining the order of merit of the pupils in the final result.

Drill.

The only instruction in practical military exercises, which is compulsory upon all, is that in drill. The pupils are exercised under arms in company drill, and are also occasionally drilled as a battalion; but very little importance is attached to this point—the only really military portion of their training. Drill goes on only for about three months in each year during the spring and summer, and even during this brief period only takes place about twice a week. By the regulations of the school the pupils should be exercised in musketry practice, but although they are armed with the Chassepot rifle this regulation is never carried out. Instruction is given in fencing and gymnastics, but attendance at both is voluntary, and scarcely more than half the pupils take advantage of it. Neither riding nor swimming are taught at the school.

Distribution of the time during the school year.

The school year commences about the 1st of November, and terminates about the 1st of August. Some seven months of the year are given up to lectures and the ordinary routine of study; about two months are occupied with the annual examinations and private preparation for them; the remaining three months—August, September, and October—are the vacation. In addition to this long vacation, from eight to twelve days are allowed after the periodical examination, which takes place near the end of February, at the close of the first portion of each year's study.

Each year's course of study is divided into two portions.

One peculiarity in the arrangements of the school is that the subjects of each year's course are not all studied simultaneously. The lectures in the main subjects of instruction—those which, as a rule, present the most difficulty—are divided into courses which continue only during a certain portion of each year. Thus in the junior division, analysis and descriptive geometry are the mathematical subjects studied during the first three months, or three months and a half. The course in them is then concluded; an examination by the Professors (*interrogation générale*) is held in these subjects, and they are

laid aside for the remainder of the year, though they enter into the examination at the close of the year. Their place is then taken by a course of lectures in mechanics and geodesy. Similarly in the second year, analysis and mechanics are the subjects of the first course of lectures, at the termination of which there is an examination; and for the remainder of the year no further lectures in them are given, stereotomy and military art taking their place,

The subjects involving as a rule less difficulty—such as history, French literature, German, and drawing—are spread over the whole year, forming generally the evenings' occupation. Physics and chemistry for both divisions, and the course of architecture for the senior division, extend also over the whole year.

Discipline and Interior Economy.

Complete separation betwen duties connected with discipline and instruction.

The discipline and internal administration of the school are entirely in the hands of the military staff, the duties of the professors and *répétiteurs* being purely confined to matters of instruction. No authority as regards discipline is entrusted either to the military professors, or even to the Director of Studies, who is a field officer. The practice at the Polytechnic in this respect differs from that at the other Military Schools of France, at which, in general, all officers employed as instructors have disciplinary powers. In cases of misconduct towards a professor, the latter reports the offender to the Director of Studies; but this officer has no power of inflicting punishment; he forwards the report to the Second Commandant. On the other hand every member of the military staff, even the adjutants—non-commissioned officers taken from the army who are employed upon it—have the power of inflicting punishment to a greater or less extent

Maintenance of discipline during lectures.

One of the captains is always present during the lectures in the amphitheatre to maintain order, and while the pupils are engaged in study in the *salles d'étude* two or more officers are on duty to exercise surveillance over them, and to see that they occupy themselves with nothing but the authorised subject of study. It does not appear that any difficulty arises from the absence of power of punishment on the part of the professors. On the contrary it was remarked, that, as a rule, greater respect is shown by the pupils toward them than towards the captains who are charged with the maintenance of discipline. The latter officers have not, in the eyes of the pupils, the prestige which is attached to the possession of high intellectual attainments.

Distribution of the pupils

The school, as already stated, is organized on military principles. The pupils of each division are formed into two

into companies.

companies. This distribution of the pupils, however, seems to be intended more to introduce an element of military organization than to serve any purposes of interior economy.

Duties of the captains ;

The companies are not specially placed under the charge of particular captains. These officers do general duty in each division; they have the general superintendence of the discipline, but except in exercising surveillance over the *salles d'étude* in their capacity of Inspectors of Studies, they are not much brought into immediate contact with the pupils. There are always two captains on duty, one for each division; one of these during his week's tour of duty is obliged constantly to remain within the school.

and of the adjutants.

The charge of the ordinary routine of disicpline is left mainly in the hands of the adjutants, non-commissioned officers selected from the Artillery and Engineers, who act as lieutenatns in the companies, and have considerable authority over the pupils. They assemble them for any duty; they call the rolls; they assist the captains on duty in the supervision of the *salles d'étude;* and they maintain order in the dormitories at night, three of them being lodged at different parts of the long corridor in which these rooms are situated.

Non-commissioned officers selected from among the pupils.

In each company there are a certain number of non-commissioned officers chosen from among the pupils themselves, and consisting of a sergeant-major, a quartermaster-sergeant (*sergent-fourrier*), and six sergeants. One of these non-commissioned officers is appointed to each *salle d'étude* as its chief, and there is similarly one in each dormitory, and to each table in the refectories. Their duties, however, are confined to mere matters of routine, and they exercise no authority whatever over their comrades in regard to discipline. The appointments are given to those who hold the highest places on the list at the time of entering the school; they are liable to be forfeited for misconduct; but, although they are said to be regarded as honorable distinctions, no privileges appear to be attached to them.

Strictness of the internal regulations.

Within the school buildings the pupils are subject to very strict rules, obedience to which is enforced by constant surveillance on the part of the adjutants. They are supplied with billiard tables, but games of cards and dice are forbidden, even though not played for money. Except at the hours of meals they can procure no sort of refreshments; there is no restaurant within the school, and the introduction of provisions or liquor of any description is strictly prohibited. No smoking is allowed except during the hours of recreation, and then only in the courtyard and recreation rooms. The pupils are only allowed to enter the dormitories at certain times during the day; every one is obliged to be in bed by 10 o'clock, and after the extinction of lights no conversation

in the dormitories is allowed. Even on days when leave is given all are required to be within the school by 10 at night; any one staying out for the night is severely punished, and a repetition of the offence would probably lead to dismissal. The introduction of newspapers or periodicals is forbidden; even books relating to the subjects of instruction are not permitted unless sanctioned by the authorities. The pupils are only allowed to receive visits from persons specially authorised by the Commandant, and except on Wednesday afternoons and Sundays they cannot leave the school buildings. On the other hand very considerable latitude is necessarily allowed them on these occasions. Nominally a captain and adjutant are on duty in the town on the days on which leave is given to the pupils; but naturally the control which can be exercised by this means in a city like Paris practically amounts to nothing. Indeed the duties of the officials so employed are only supposed to consist in seeing that the pupils appear in the streets properly dressed in uniform, and their control even theoretically scarcely extends to matters of conduct. Improprieties in the public streets would indeed be punished if observed; but it is said that the *esprit de corps* among the pupils is generally sufficient to prevent any conduct in public which would bring discredit on their uniform. The maintenance of the "*Police extérieure*" is chiefly left to the public opinion of the pupils themselves. Intoxication is severely punished, and a repetition of the offence entails dismissal from the school.

Absence of control over the pupils outside the school.

As already mentioned, the pupils are not actually subject to military law, but the punishments are chiefly of a military character. They are as follows:—

Punishments.

(*a.*) Deprivation of leave on Wednesdays and Sundays (*la consigne*). The pupils punished in this manner, in addition to losing their leave, are obliged to study in the *salles d'étude.*

(*b.*) Arrest, which, however, is only inflicted during the hours when the other pupils are allowed to leave the school. The pupil under arrest is locked up in the arrest-room (*salle de police*), and takes his meals there, but may be allowed to sleep in his dormitory. The punishment is not accompanied by any deprivation of food.

(*c.*) Public reprimand in the daily orders of the school (*la mise à l'ordre de l'école*).

(*d.*) Imprisonment in cells within the school (*la prison intérieure*). This punishment is continuous during the period for which the offender is sentenced to it. While undergoing it a pupil is only allowed half

an hour's exercise daily in the court-yard, under the surveillance of an adjutant.

(*e.*) Imprisonment in a military prison.

(*f.*) Dismissal from the school.

Power of inflicting punishments.

These punishments can be inflicted by the members of the military staff, according to the following scale:—

By the adjutants, four days' deprivation of leave.

By the captains, eight days' deprivation of leave, or six days' arrest.

A captain can also for grave offences place a pupil in the school cells and bring the case before the notice of the Commandant, who determines the duration of the punishment.

By the Second Commandant, 12 days' deprivation of leave, eight days' arrest, or four days' cells.

Powers of the Commandant.

The Commandant has the power of increasing or diminishing any punishment inflicted. He can inflict all punishments except dismissal, but his power of sentencing to military imprisonment is limited to 15 days. Dismissal can only be inflicted by the Minister of War, on the recommendation of the Council of Discipline. Any pupil who, from the time of his admission to the school, has undergone more than 20 days' cells or 15 days' military imprisonment, or who has been guilty of insubordination, or whose conduct is habitually bad, can be brought before the Council. The constitution of this board has already been described. It forms a sort of court-martial, before which the offender is arraigned; a full report is made of his previous conduct; his punishment sheet is produced, and witnesses are examined as to the particular facts which have led to his having been brought before the board. The offender is also heard in his own defence. The Council have no power of inflicting punishment themselves, but, on the termination of the proceedings, the members vote by ballot upon the question whether the offender's dismissal should be recommended to the Minister. Such a recommendation requires a majority of two-thirds of the votes.

Arraignment before the Council of Discipline.

Ease in maintaining discipline.

In former days, and particularly at times of political excitement, the pupils of the Polytechnic, who have always been distinguished by liberal tendencies, frequently gave considerable trouble to the authorities. At the present time they appear to interest themselves very little in politics; no attempt at collective disturbances has for a long time occurred, and the maintenance of discipline is said to occasion no difficulty. Cases of imprisonment or dismissal very rarely occur.

Good conduct marks.

Marks are given for conduct, but they have no influence on the final classification of the pupils. They are merely a

record of the individual's behaviour; and in the case of those pupils who enter the Artillery and Engineers, the record of their conduct marks is sent with them to Metz in order to afford information as to their general character. No special rewards are held out to good conduct; with regard to leave, all the pupils are exactly upon the same footing, except those who, by actual misconduct, have forfeited their right to it. The rules in every respect are the same for all; neither those appointed as non-commissioned officers, nor the older pupils, are allowed any privileges; indeed, as very few enter the school before 18, there is practically not much more than two years difference of age among the students.

Punishments for idleness.

The keen competition among the pupils is probably sufficient to prevent any real idleness; the only regulation attaching any special punishment to it appears to be that when an individual is marked with zero for his answers in any of the *interrogations*, or for work in any subject, he is, as a matter of course, subjected to arrest.

Examinations.

Marks carried forward for work done during the course.

It has already been stated to what an extent the work done during the course of each year aids in determining the relative merits of the pupils. From the moment of admission to the school they may indeed be said to be constantly undergoing examination; for the notes taken at lectures, the written exercises and compositions on subjects set by the professors, the drawings executed, and the manipulations performed in chemistry and physics, all, more or less, affect the final classification. But the most important part in estimating the comparative merits of the individuals is played by *vivâ voce* examinations—in fact, it appears that there has of late years been a tendency to diminish the importance of the written exercises demanded from the students, and to trust more to the test of oral examination. The value at present attached to written answers to questions and other work executed in the *salles d'étude* is (except in regard to French composition and drawing) considerably less than it was in 1856; while on the other hand the value attached to the *interrogations* has been proportionally increased. The reasons given for this alteration have been previously stated.

Oral examinations.

Examinations by the *Répétiteurs.*

The most frequently recurring of these *vivâ voce* examinations are those already described as the *interrogations particulières* held by the *répétiteurs*. These examinations take place on an average in the proportion of one to every five or six lectures in each subject, the examination being confined

Periodical examinations by the professors.

to the instruction given in these lectures. A pupil is in general subjected to an *interrogation particulière* about four times during each course of lectures. In addition to the *interrogations particulières* there is at the end of the first three months of each year a *vivâ voce* examination by the professors assisted by the *répétiteurs* (*interrogation générale*) in the subjects of the courses of lecture which then terminate. Thus the pupils of the first year are examined in analysis and descriptive geometry, those of the second year in analysis and mechanics. An interval of about eight days after the termination of the lectures is allowed for preparation before the examination. Formerly there was a similar *interrogation générale* at the close of the second course of lectures later in the year; but this has now been given up, partly on the ground of its being unnecessary at a time when the annual examination is close at hand, and partly from its being found to be too great a strain upon the students, and to interfere with their preparation for the more important ordeal before them.

There is thus no periodical examination of any sort in the subjects of instruction taken as a whole; the *interrogations particulières* by the *répétiteurs* are confined to the matter of some five or six lectures in one particular subject; and even the single *interrogation générale* by the professors, which occurs in the course of each year, is a half hour's examination in merely two of all the subjects taught during the year. At periodical intervals, and four times at least in each year, the marks gained by each individual are publicly made known; and after the *interrogation générale* the pupils are arrranged in order of merit according to the marks gained up to that time.

Annual examinations by examiners unconnected with the school.

At the close of the year's instruction there is an examination of each division conducted by independent examiners. This examination embraces all the theoretical subjects taught during the year, with the exception of history and military art (which as before stated do not affect the final result), and French composition, in which the merits of the pupils are determined by essays written during the course of instruction. In the various kinds of drawing there is similarly no examition, the numerous drawings executed during the year, and already marked by the professors, being the only test required in this subject. The final examination of the senior division at the close of the second year formerly embraced all the subjects taught during the two years' course of instruction, but it is now confined entirely to the subjects studied during the second year.

Mode of conducting the examinations.

The lectures each year terminate at the end of May, and about 12 days later the examinations commence, the interval being giving up to preparatory study. Half of June and the whole of July are occupied in the examinations. Each pupil is examined in the several subjects successively on fixed days, and between the succesive examinations of each candidate an interval of about 12 days is allowed for preparation in the next subject. The examination like the *interrogations* is entirely *vivâ voce*; for each subject there is one examiner, by whom every pupil is examined for about an hour in that subject. The examiners are expressly prohibited from being supplied with any information as to the marks gained by the pupils previously.

System of marking.

The system of assigning marks for these examinations, as well as for the various periodical *interrogations*, and for the work executed during the course, is the same as that already described for the entrance examination. The relative merits of the pupils in each subject are estimated by numerical credits varying from zero to 20; and every subject has its "co-efficient of importance" by which the credits assigned to each individual in that subject are multiplied. The sum of these products represents the total number of marks gained by the pupil. In both years' examinations the marks given by the professors and *répétiteurs* during the year have a higher relative value than those awarded at the annual examinations; in the first year their additional value is about one-sixteenth, in the second year it amounts to as much as one-seventh, of the total number of marks. In determining the final order of merit at the end of the second year, half the number of marks gained during the whole of the first year (including the examination at its close) are carried forward to the credit of each pupil. It appears that as a rule the average number of marks gained in the yearly examinations is slightly lower than that of those gained in the *interrogations*, the subjects of which are of course of a much more limited nature.

Relative importance of the subjects of examination in each year.

The following tables show the co-efficients of importance of the various subjects on which the classification of the students at the end of each year depends:—

Table I.

First Year's Course of Studies.—Second Division.

A.—*Work done during the Course.*

Analysis	Examinations by the *répétiteurs* (*interrogations particulières*).	15	30
	Examination by the professor at the end of the course (*interrogation générale*).	15	
Mechanics	Drawings	10	28
	Examinations by the *répétiteurs* (*interrogations particulières*).	18	
Descriptive geometry	Drawings	15	35
	Examinations by the *répétiteurs* (*interrogations particulières*).	10	
	Examination by the professor at the end of the course (*interrogation générale*).	10	
Physics	Examinations by the *répétiteurs* (*interrogations particulières*).	15	15
Chemistry	Examinations by the *répétiteurs*	15	20
	Manipulations	5	
Geodesy	Examinations by the *répétiteurs*	15	20
	Written compositions and drawings	5	
French literature	Written compositions	12	12
German	Examinations by the *Répétiteurs*	5	5
Drawing		12	12
Tinting and shading plans		4	4
	Total for the course		181

B.—*Examination at the end of the Year.*

Analysis	30	
Mechanics	30	
Descriptive geometry	20	
Physics	25	
Chemistry	25	
Geodesy	25	
German	5	
Total for the examination		160
General Total		341

Table II.

Second Year's Course of Studies.—First Division.

N.B.—Half the number of marks obtained in the Second Division during the first year are carried forward.

A.—*Work done during the Course.*

Analysis	Examinations by the *répétiteurs* (*interrogations particulières*).	12	24
	Examination by the professor at the end of the course (*interrogation générale*).	12	
Mechanics	Examinations by the *répétiteurs* (*interrogations particulières*).	15	30
	Examination by the professor at the end of the course (*interrogation générale*).	15	
Stereotomy	Examinations by the *répétiteurs*	15	25
	Drawings	10	
Physics	Examinations by the *répétiteurs*	15	15
Chemistry	Examinations by the *répétiteurs*	15	20
	Manipulations	5	
Architecture	Sketches and notes	10	32
	Finished drawings	12	
	Competitive design for a building	10	
Military art and topography	Drawings	8	8
French literature	Written compositions	12	12
German	Examinations by the *répétiteurs*	5	5
Drawing		12	12
	Total for the course		183

B.—*Examination at the end of the Year.*

Analysis	25	
Mechanics	30	
Stereotomy	25	
Physics	25	
Chemistry	25	
German	5	
Total for the examination		135
General Total		318

Exaction of a minimum standard in the examinations.

In each year's examination a candidate must obtain a fixed minimum number of marks in the subjects both collectively and individually, in order to come up to the required standard. In the examination at the end of the first year, a pupil whose general *mean credit*, calculated upon the whole of the subjects of examination, does not exceed the average of seven out of 20 (as represented by the scale of marks employed), is dismissed from the school. In other words, about one-third of the total number of marks must be gained by a pupil in order to allow of his passage into the senior division. In the same way any pupil whose mean credit in

more than one branch of study falls as low as four out of 20 (*i.e.* one-fifth of the maximum), is also dismissed. Cases of dismissal are extremely rare, never exceeding at the utmost one or two in a year. It is said that even those pupils who exhibit little anxiety as regards competition, look with great dread upon the chance of being dismissed from the school. Similar regulations exist for the requirement of a minimum number of marks in the second year's examination as a condition of qualification for admission to the public services. Failures in this respect are said scarcely ever to occur.

Presence of delegates from the public departments at the examinations.

With the object apparently of exercising some sort of control over the examinations, delegates from the various public services recruited by the school are present at them. They take no part whatever in the examination of the pupils, but are supposed to point out to their respective departments any whom they may think unfit, from physical or other causes, for the public service. Practically, however, their power of interference is never exercised.

Classification of the pupils.

At the close of the examinations a list in order of merit of the pupils of each year is drawn up by a jury composed of the five examiners, the Commandant of the school, the Second Commandant, the Director of Studies, and four members of the *Conseil de Perfectionnement.* The jury also decide upon those who, on the ground of failure in either examination, are ineligible for promotion to the senior division, or for appointment to the public service. Their decision is final.

The rule regarding the exaction of a minimum qualification in the examinations is most strictly adhered to. It is only in cases of an interruption of his studies by illness that a pupil is ever allowed to remain a third year at the school; and, this concession is made solely on the special recommendation of the jury who draw up the lists of classification.

Selection of the public services.

The final classification of the students at the close of the second year determines the order in which they are allowed the choice of the services open to them. Those at the head of the list appear invariably (except in time of war) to select the civil in preference to the military services, the remuneration in the former being much higher. The order in which the services most sought after are generally chosen, is at present nearly as follows:—

(1.) The department of the mines, in which there are usually only three appointments.

(2.) The *Ponts et Chausées,* the *Génie maritime* (naval architects), and the tobacco department—all very nearly on an equality.

(3.) The Engineers.
(4.) The Artillery and the Staff Corps—nearly on an equality.

Though the addition of one-tenth above the probable requirements of the public services is made to the number of the candidates admitted to the school, this addition is scarcely more than sufficient to compensate for the number of those who from illness or other causes leave the school before the completion of the course. Thus, there are practically appointments for all who pass the final examination. The competition, great as it is, is not so much for admission to the public service, as for the power of selecting the particular branch of it which is especially desired. It is in the latter fact that the peculiarity of the Polytechnic and the secret of its success as an educational establishment are said chiefly to lie; and this peculiarity alone, in the eyes of the authorities of the school, renders its system inapplicable in any other country where similar conditions do not exist. The method of instruction, the frequent examinations, the repetitorial system itself, are all regarded merely as secondary matters which are at best but subsidiary aids to study; the great stimulus to industry, the secret of the competition which prevails among the pupils, is the fact that the school is the channel of admission to so many different services, and therefore offers to its pupils so many prizes to which varying degrees of value are attached.

Stimulus to competition afforded by the variety of the prizes offered.

"It is not," said the Director of Studies, "our *interro-* "*gations*, our examinations and other contrivances (*petits* "*moyens*), which make the pupils work; it is not even the "system of competition by itself; it is not mere personal "ambition or the desire of taking the first place on the "list. All these conditions exist at the Schools of Applica- "tion, as for instance at Metz, and yet the results in regard "to industry are widely different. It is the inequality "in the value of the prizes offered to the pupils, the choice "of careers open to them (*carrières diverses et inégalement* "*cherchées*), which is the great incentive to work at the "Polytechnic; and no institution, although it may imitate "the details of the Polytechnic system, can secure similar "results unless it holds out similar inducements to its "pupils."

Opinion of the Director of Studies.

It is stated by the authorities of the school that, except in the case of about 30 of the pupils who are highest on the list each year, the amount of study is not excessive notwithstanding the keenness of the competition. At the same time it would appear that some at least of the students on being

Severe character of the course of study.

subsequently admitted to the Schools of Application, show signs of mental exhaustion ; and many of the changes recently made at the Polytechnic seem to evince a desire to diminish the strain upon the intellectual powers. The abridgment of many of the courses of instruction, the addition of a month to the vacations, the suppression of the second periodical examination (*interrogation générale*) in the course of the year, and the restriction of the final examination to the subjects studied during the second year appear to have been dictated by this motive.

Course subsequently pursued with the pupils appointed to the military services.

The successful pupils, after quitting the Polytechnic, are sent to the Schools of Application for the various services in which they have received appointments. All who select the military services to which the school gives admission—viz., the Artillery, the Engineers, and the Staff Corps—receive commissions as sub-lieutenants; those appointed to the Artillery and Engineers go to Metz in November ; the few who are admitted to the Staff Corps enter the *École d'état-major*, in Paris, in the following January. An allowance for outfit (*première mise d'équipement*) is sometimes made to those who have been exhibitioners (*boursiers*) at the school, and enter the military service. The amount granted in each case is the same as that allowed to non-commissioned officers who are promoted to commissions, (750 francs.) This concession is entirely dependent on the means of the student and is not in any way influenced by his place in the examination list. Students who fail to pass the final examination are occasionally allowed to enter the Artillery or Engineers with the rank of non-commissioned officers, in consideration of the time spent at the Polytechnic.

In time of war the ordinary course of the Polytechnic is sometimes shortened, in order to afford a supply of officers for the Artillery and Engineers. This was done during the Crimean war; and even in time of peace candidates for the marine artillery are occasionally sent to Metz before the completion of their two years at the Polytechnic.

General Remarks.

The general educational results of the system pursued at the Polytechnic are most fully remarked upon in the Report of the Commissioners of 1856, and it would be impossible to add anything to the comments there made. It may be noticed, however, that there seems at the present time to be a slight tendency to give a more general and literary character to the instruction, and to make it less exclusively mathematical, than was formerly the case.

Complaints brought against the Polytechnic by military men.

It will be sufficient here to consider the institution merely in its military aspects—as a school which, though not specially preparatory for, is still the means of admission to the scientific branches of the army. Regarded in this light, the school has been and still is the object of numerous criticisms on the part of military men in France.

The course of study considered too abstract.

1. With regard to the fitness of the course of instruction at the school as a preparation for military service, opinion appears to be still, as in 1856, much divided. It is urged by some that the attention almost exclusively paid to mathematics and pure science induces too abstract a turn of mind, and unfits the students for the practical duties of military life; on the other hand it is maintained that the theoretical course of the Polytechnic forms the best possible ground-work for the professional instruction which is subsequently given at Metz. A few further allusions to this subject will be found in the accounts of the school at Metz and of the Staff School. It would be useless to attempt any decision of a question which is a matter of controversy in France itself; the difference of opinion which prevails on the subject is shown by the answers which were received from several of the most eminent officers of the French army by the Commissioners of 1856, and which are printed at length in their report.

Opinion generally in favour of educating candidates for the civil and military services together.

2. With regard to the advantages of educating in common candidates for the civil and military professions, opinion is also to some extent divided, though less so than on the former question. On the whole the balance of opinion appears to be decidedly in favour of the present system. It collects more talent and gives a better supply of able officers than could be obtained by any purely military school, the competition for admission to which would be comparatively limited. Another advantage claimed for the existing system is, that it gives those who subsequently enter the military service much more extended and liberal views than if they had been educated exclusively among a special class intended for the same profession. It also establishes a more intimate connexion between the civil and the military services, as the feelings of *camaraderie* and *esprit de corps* fostered at the Polytechnic form a constant bond of union among its former pupils in after life, however different may be the careers upon which they have entered. This indeed is one of the most characteristic results of the Polytechnic education. The institution in this respect appears to hold in France a position somewhat similar to that of the public schools or universities in England; a Polytechnic pupil entertains in after life much the same feelings towards the institution as a public school or

Strong *esprit de corps* which distinguishes the Polytechnic pupils.

university man in England bears towards his school or college, and he never ceases to pride himself upon his title of *ancien élève de l'Ecole Polytechnique.* This very feeling, the strong *veneratio loci* which is kept up, may perhaps make its former pupils not altogether impartial critics of the system of the institution. Even those who doubt the wisdom of making the school a common preparation for the civil and military services, allow that its high reputation confers a great prestige upon the officers of the Artillery and Engineers, and that it would in this respect be a decided loss to these services to cease to recruit them from the Polytechnic.

Preference shown by the ablest pupils for the civil services.

3. The weak point of the Polytechnic, in a military point of view, appears to be that the civil services offer the highest prizes, and are consequently the most sought after, and selected by the ablest pupils. The result of this is that those to whom appointments in the military services fall, enter these services as a rule with a certain amount of reluctance. The military profession is not, to use a French expression, their natural "vocation." This objection has been frequently urged against the Polytechnic. It must, however, be added that many maintain that the objection is more apparent than real. It is urged that the preference shown for the civil service is more the result of pressure put upon the young men by their families than of their own free will. General Favé, the distinguished Commandant of the Polytechnic, also stated that any indisposition towards the military service, which may in the first instance be felt, speedily disappears under the influence of the strong *esprit de corps* existing in the Artillery and Engineers, which is brought to bear on the young officers from the moment of their admission to Metz. The results of the system are said to be practically good, even if theoretically they may appear unlikely to be so. The officers of the scientific corps have always proved themselves on service equal to those of any other branch of the army in the performance of their practical duties, and if the Artillery and Engineers cannot boast of enlisting into their service the highest intellects in France, there appears every reason to suppose that the intellectual and scientific attainments of their officers are at least equal to those of officers of the same arms in other countries.

The results not considered really prejudicial to the army.

THE SCHOOL OF APPLICATION FOR THE ARTILLERY AND ENGINEERS AT METZ.

(*Ecole Impériale d'Application de l'Artillerie et du Génie.*)

General Description.

Metz the combined School of Application for the Artillery and Engineers.

The professional instruction of officers of the French Artillery and Engineers is carried on together at the school of Metz. This establishment is one of the various Schools of Application to which the successful students of the Polytechnic are sent after the completion of their course there, in order to obtain the special instruction suited to the services which they have respectively selected.

Artillery schools before the Revolution of 1789.

" The first French Artillery school was founded in the " time of Louis XIV. (in 1679) at Douai. It had but " a short existence; and it was only in 1720 (under " the Regency), when the royal regiment of Artillery " received a new organization, that schools of theory " were permanently founded in each of the seven towns " where there were garrisons of Artillery. But no academy, " properly so called, was established before that founded " by D'Argenson at La Fère in 1756, with a staff of two " professors of mathematics and two of drawing. This " was transferred to Bapaume, near the Flemish frontier, " in 1766, retransferred to La Fère, and suppressed, among " other schools, at the beginning of the Revolution. Of " early Engineer schools, there was only one—the very " distinguished school of Mezières, near the northern frontier. " This was founded in 1749, also under the ministry of " D'Argenson; Monge was a professor there; and it had a " very high reputation down to its suppression in the " Revolution.

Engineer schools during the same period.

Schools at Châlons and Metz during the wars of the Revolution.

When the wars of the Revolution broke out " provisional schools for giving a brief course of rapid in- " struction were established at Metz for the Engineers, and at " Châlons-sur-Marne for the Artillery. These had to supply, " at a great disadvantage, the officers needed for the pro- " tection of the invaded frontier.

Conversion of these into Schools of Application.

It was intended originally " that the Polytechnic, established in 1794, should send " Engineers direct to the army; but it was quickly found to " be a better plan to allow the pupils destined for this " service first to spend some little time at Metz; which " thus, in October 1795, became a School of Application for " Engineers. The Artillery pupils, in like manner, went to " Châlons.

Their combination into

This separate system of two Schools of Appli- " cation continued till 1802, when the establishment at

one school at Metz.

"Châlons was united with that of Metz, and Metz became "what it has since continued to be, the seat of the united "School of Application for the two services. The Poly- "techic students who select the *artillerie de terre*, *artillerie* "*de mer*, or the *génie militaire*, enter here to receive the "special and professional instruction deemed requisite to "fit them for actual employment."*

Officers of Artillery and Engineers receive four years' education.

Before being definitely appointed to either of these services a young man, unless promoted from the ranks, must, firstly, have passsed through a two years' course of theoretical study at the Polytechnic,—and secondly, through a further two years' course of professional instruction at Metz. There is no special entrance examination for the School of Application; admission to it is determined by the final examination at the Polytechnic. The only students received at Metz without having previously passed through the Polytechnic course are officers of the Artillery and Engineers who have been promoted from the ranks, and whose abilities are such as to make it probable that they will be able to derive advantage from the course of instruction. Very few of these officers, however, avail themselves of this privilege, certainly not above one-fifth of all who obtain their promotion. In October last there was only one student of this class in the school, who was just completing his second year; another was to enter with the next admission of students.

Entrance to the school of Metz from the Polytechnic.

The ordinary students quit the Polytechnic on the 1st of August, and after three months' vacation enter the School of Application on the 1st November,† with the provisional rank, the uniform, and the pay of sub-lieutenants (*sous-lieutenants.*)

Age at admission.

Their average age at the time of admission is about 21, but a few enter as early as 19. From 19 to 24 may be considered the general limits of age of the students at the school.

Duration of the course.

The regular term of residence is two years, and the course of instruction is suited to this period. Under extraordinary circumstances—as, for instance, in time of war, or when the demand for officers is very great—the term of residence is shortened by omitting some portions of the instruction; but such a measure applies to all the students of the same year; individuals cannot complete the course in less than the regulated time; in fact, the full course, as it exists, is said to be as much as can be got through in the two years, more, indeed, than can be done satisfactorily. In cases of illness, and sometimes also in case of failure at the examina-

* Report of the Comissioners of 1856.

† This is the existing regulation as to the time of commencing the school course, but it is liable to alteration from time to time.

tions, permission to remain a third year at the school is granted.

Choice of service made before admission.

The choice of service is made at the time of quitting the Polytechnic, but exchanges between the students of the Artillery and Engineers are occasionally allowed during the early part of the course at Metz, while the instruction given is mainly common to both. At a later period no such exchanges are permitted. At the termination of the course the students who pass the final examination receive definitive appointments as second lieutenants in the corps they have chosen—the Artillery, Engineers, or Marine Artillery—according to their order of merit. "They are allowed to "count as regards retirement from the service and towards "military decorations four years' service on account of the "two years passed at the Polytechnic, and of the time "passed in preparing for admission to it, reckoning from the "day of their admission to the School of Application.*

Number of students.

The number of yearly admissions is not definitely fixed, but depends on the vacancies likely to occur in the services. Under ordinary circumstances, however, the number of students is 160, 80 of whom are admitted each year, and constitute a division by themselves. Of the 80 in each division about 40 are intended for the land Artillery, 10 for the marine Artillery, and 30 for the Engineers. The course of instruction for the land and marine Artillery is exactly the same.

Classification in divisions, brigades, &c.

Each division is divided into brigades of 30 students at the most, the students of Artillery and Engineers forming, as far as possible, distinct brigades. Each brigade, for purposes of interior economy, is placed under the special charge of one of the captains on the staff of the school. There are at present three brigades, two of Artillery and one of Engineers, in each division. For certain purposes of instruction—in cases in which it is desirable to have only small classes, more especially for riding and German—a division is also divided into sections. There are at present four sections in each division.

Military establishments at Metz.

Metz is a fortified place on the Moselle, with a garrison at present of 12,000 men. Considerable works are now being carried on there by the construction of various detached forts, at a distance of a mile and a-half or two miles beyond the old *enceinte*. The town contains an arsenal both for the Artillery and Engineers, a school of pyrotechny for the manufacture of ammunition, a powder manufactory, and two regimental schools, one for the Artillery the other for the Engineers.

* Report of the Commissioners of 1856.

The school buildings.

The following description of the buildings of the School of Application is taken mainly from the Report of the Commission of 1848.

"The School of Application occupies buildings erected on "the site, and partly the original buildings themselves, of a "suppressed Benedictine monastery. Three sides of the "cloistered monastic quadrangle are devoted to the offices, "lecture rooms, galleries, and halls of study. A fourth, "formerly the ancient church, is converted into a *salle des* "*manœuvres*. There is an adjoining residence for the Com- "mandant, and a separate modern building, four stories in

Salle des manœuvres.

"height, affords lodging to the young men. The *salle des* "*manœuvres* is a large area under a lofty roof, rising to the "whole height of the buildings of the quadrangle; it con- "tains artillery of various descriptions, mortars, field and "siege guns placed as in a battery, and is amply large enough "to allow cannon to be moved and exercises performed when "the state of the weather may make it desirable. The

Lecture room.

"amphitheatres or lecture rooms, much on the same system "as those at the Polytechnic, are two in number, one for

Museums.

"each of the two divisions. The galleries, partly on the "ground floor, partly on the first floor, contain very good "collections of models of artillery, ancient and modern, "of sets of small arms, of tools, of the locks, barrels, "and other portions of muskets in various stages of the pro- "cess of their manufacture, of specimens of carpentry and "roofing, of minerals, of models of fortifications, bridges, "coffer-dams, locks, &c." There are also various specimens of hydraulic presses, steam engines, and other kinds of machinery, to the drawing of which, as in all French schools, much importance is attached. These collections are greatly used in illustrating the various lectures, the articles being exhibited to the students in the lecture-rooms for this purpose. The mineralogical museum is particularly complete, and contains not only specimens of metals in various stages of manufacture, but also the means of practically exemplifying

Laboratory.

many of the chief manufacturing processes. There is also a chemical laboratory, in which the students perform manipulations in analysis, chiefly in regard to specimens of building stones, metals, and powder. A separate room contains a fine collection of surveying and astronomical instruments, which are used by the students. Altogether the collections at Metz appeared to be richer than those of any other school visited either in France or Prussia.

Halls of study.

On the first floor are the two *salles d'étude*, which are on a different plan from those at the Polytechnic, each one being large enough to accommodate a whole division of 80

students. On the same floor also is the library, with an adjoining reading room, to which the students are admitted for purposes of study during certain hours of the day. Near the library is the room in which the examinations are held. At the time the school was visited (in the beginning of October) the yearly examinations were going on, and a number of students were found outside the examination room, looking over their drawings and notes while awaiting their turn for appearing before the examiners. Library. Examination room.

"The barracks, on the opposite side of the open space used "for drill and exercises, form a lofty and handsome building, "entered by separate staircases, the ground-floor rooms of "each being assigned to a servant, who undertakes to provide "attendance for all the young men lodging in the rooms "above. The rooms are comfortable, mostly double-bedded, "the bed-room serving also as a sitting-room, and a small "adjoining closet being used for washing, &c. Twenty or "22 appear to be thus accommodated on each staircase; "there are lodgings altogether for 145." The students for whom there is not accommodation in the barracks, at present 15 in number, lodge in the town. This is considered as a privilege which is only granted to those of the best character in the senior division. All, however, take their meals in the town, though not independently; they are formed into messes of 10 each and distributed among various restaurants, with which the authorities of the school form contracts for the daily meals. Considerable control is exercised over the expenses of these messes. Quarters of the students. Arrangements for messing.

There are no billiard or other recreation rooms within the school itself; the students find their means of amusement in the town. Absence of recreation rooms.

A riding-school is attached to the buildings, with stabling for about 70 horses, which are kept for the use of the students. Riding school.

Organization and Establishment.

The present organization of the school is fixed by a decree dated 14th August 1867. Since the report of the Commissioners of 1856 the staff of instructors has been considerably increased. Establishment.

The general staff of the institution consists of:— General staff.

- 1 general of brigade, as Commandant, with an aide-de-camp.
- 1 colonel or lieutenant-colonel, Second Commandant and Director of Studies.
- 1 major of Artillery.
- 1 major of Engineers.
- 5 captains of Artillery.
- 3 captains of Engineers.

The Commandant is taken alternately from the Artillery and Engineers, the Second Commandant from that arm which does not supply the Commandant.

Staff of instructors.

The staff of instructors is as follows:—

1 professor of artillery.	officers of Artillery.
1 assistant do.	
1 professor of permanent fortification.	officers of Engineers.
2 assistant do.	
1 professor of field fortification, military art, administration, and legislation.	officers of Engineers.
1 assistant do.	
1 professor of mechanics, as applied to machinery.	officers of Artillery.
1 assistant do.	
1 professor of sciences, applied to the military arts.	officers of Artillery.
1 assistant do.	
1 professor of the course of construction.	officers of Engineers.
1 assistant do.	
1 professor of topography and geodesy.	officers of Engineers.
1 assistant do.	
1 professor of veterinary science and riding.	officers of Artillery.
2 assistant instructors in riding.	
1 professor of German -	a civilian.
1 drawing master - -	a civilian.

In all, nine professors, ten assistant professors, and one drawing master—all of whom, with the exception of the professor of German and the drawing master, are military men.

A treasurer, a librarian, various clerks, storekeepers and draughtsmen, and a fencing master, are also attached to the school.

Appointment of officers and instructors.

The appointments on the general staff of the school are made by the Minister of War; they are all (including the appointment of Commandant) limited to five years. The military professors and the drawing master are also nominated by the Minister, but the professorship of German is thrown open to competition. There is no limit to the tenure of the professorships, and some of the present occupants have been at the school for many years. The unlimited duration of these

appointments appears to be considered a disadvantage. No general rule seems to exist regarding the principles on which the appointments are made; some of the officers employed at the school have seen much service, others have scarcely been out of France. The appointments are not in general very much sought after.

Duties of discipline and instruction to a great extent combined.

As is generally the case in the French schools, except the Polytechnic, there is no broad line of demarcation between the duties of the officers of the general staff and those of the professors. The former are more particularly charged with the discipline and the details of the interior economy of the school; but the professors (with the exception of the single civilian among their number) not only have the power of inflicting punishment, but are also required to take cognizance of any irregularity which may come under their notice either within or without the school. The Second Commandant, who, though called Director of Studies, exercises a general control both over the studies and the discipline, is, in case of absence, replaced by the senior officer present, whether the latter be one of the general staff or a professor; so that a member of the body of professors may be at times charged with the chief control over discipline.

Duties of the field officers.

The two majors of Artillery and Engineers employed upon the general staff not only superintend the interior economy of the school, but also act as assistants to the Director of Studies, in exercising special supervision over the theoretical instruction so far as it relates to their own arms, and themselves give the instruction in drill and most of the other practical work. The practical instruction in military bridging, for instance, is given not by the professor of fortification, but by the major of Engineers on the staff.

Of the captains.

The captains on the staff are charged with the details of the discipline and daily routine of the school. Each brigade of students is under the special charge of one of them. The captains further assist the field officers in the drills and other practical instruction; while on the other hand, when the students are engaged in surveying on the ground, and in visits to military establishments, they assist the professors not only in the surveillance of the young officers, but also in giving instruction. In fact, the marks assigned to the outdoor portion of any sketch or survey are given, not by the professors, but by the captains of the staff.

Government of the school.

The school is under the general superintendence of two boards or councils—the superior council and the administrative council. The description given in the Report of 1856 still applies to the constitution and duties of these councils.

"The superior council consists of the general commandant,

" as president; the second in command, the director of studies, " as vice-president; the major of artillery and the major of " engineers, as permanent members; two captains of the " establishment, one of each arm; two military professors, " one of each arm; and one captain of the establishment as " secretary; these five last being all removable at the general " inspections.

" The superior council has the duty of drawing up the pro- " gramme of the studies of the year, of suggesting changes in " the regulations relating both to studies and discipline, all " subject to the approval of the Minister of War; of pre- " paring at the end of the year the classified list of the " students, drawn up according to their conduct and pro- " gress in their studies, and of pointing out to the jury of " examiners any students who have displayed idleness or " negligence in their work.

" When questions relating to the instruction are brought " before the superior council, the whole body of military pro- " fessors attend and take part in the proceedings, and the " council is thus said to be constituted as a Board or Council " of Instruction. Improvements are here suggested, and are " subsequently submitted to the jury of examiners, and to the " Minister of War; the value to be attached, in the system of " marks or credits, to each particular course of study is deter- " mined; a statement is drawn up showing what printed " works, models, &c. are wanted. The budget itself, to be " submitted to the Minister of War, is finally drawn up by " the superior council in its ordinary sittings.

" The administrative council, composed of the second in " command as president, the two majors of artillery and " of engineers, one captain and one military professor, and " the treasurer as secretary, takes cognizance of all financial " and other business matters of the school."

The annual expense of the establishment, taken from the Budget for 1869, is as follows:—

	Frs.
Staff.	
Salaries of civilian professors and *employés* (exclusive of the pay of all military officers) -	51,660
Instruction and administration.	
Purchase of books, instruments, fuel and light, maintenance of buildings - - - -	47,840
Regimental pay of officers and non-commissioned officers employed at the school - -	128,350
Regimental pay of 180 officer students - -	288,000
Total - - - - -	515,850

or about 20,600*l.*, of which, however, more than half consists of the regimental pay of the students.

Course of Instruction.

The course of instruction at the school, comprises :— Subjects of instruction.

(*a.*) *Artillery*—including the science of projectiles; artillery *matériel* and small arms; the construction of batteries;* the organization of artillery; coast defences; the employment of artillery in the field and in the attack and defence of positions and fortified places.

(*b.*) *Permanent fortification and the attack and defence of fortresses*—including defilade, mining, frontier defences and entrenched camps.—The bastioned system is still the main subject of instruction at the school, but the polygonal system is also now taught. Plans of Antwerp, Ingoldstadt, Rastadt, and other places fortified on this system were hung in the *salles d'étude*, and the project of an attack on Rastadt was seen among the fortification plates executed by the students.†

(*c.*) *Military art and field fortification.*—These two subjects form a single course taught by the same professor. The course comprises, in addition to field fortification as generally understood in England, castrametation, road-making, bridging, and the execution of a project for a siege, together with a short account of tactics, strategy, and the organization of armies.

(*d.*) *Military legislation and administration*—also taught by the professor of military art and field fortification. The subject comprises a general account of the legal rights and liabilities of soldiers; regulations relating to discipline, military tribunals, and penalties; military finance, and duties connected with the supply, clothing, barrack and hospital services, and the organisation of the manufacturing departments. The subject, however, does not appear to be treated in much detail, only 12 lectures being allotted to it during the two years' course.

(*e.*) *Military topography, reconnaissance and field-sketching.*—At the Polytechnic the students have already

* In the French Service the Artillery are charged with the construction of their own batteries.

† In the detached forts now in course of construction round Metz, very considerable modifications of the bastioned trace have been introduced, although the polygonal system has not been actually adopted, and the German *caponières* are not employed.

learnt the conventional signs used in plans, but have had no instruction in military sketching. At Metz they begin with hill and plan drawing from copies, and then practise the reduction of plans to smaller scales. About one-third of the whole time devoted to the course is spent in this preparatory work, after which sketching on the ground is commenced. Drawing from models is not practised.

(*f.*) *Higher geodesy and trigonometrical surveying*—including astronomical observations.

(*g.*) *Physical sciences*—viz. geology, mineralogy, metallurgy, and chemistry, in their military applications; the course comprises instruction in the processes employed in the manufacture of small arms, ordnance, powder, and ammunition.

(*h*) *Applied mechanics and machinery.*

(*i.*) *Architectural and hydraulic construction*—with special reference to buildings for military purposes.*

(*k.*) *German.*

(*l.*) *Veterinary science.*

(*m.*) *Riding*, including cavalry drill.

(*n.*) *Drill*—comprising, firstly, theoretical instruction in the cavalry, infantry, and artillery drill-books; and, secondly, practical exercises in artillery and infantry drill. The students go through a course both of musketry and artillery practice.

(*o.*) *Fencing.*

(*p.*) *Swimming.*

(*q.*) *Dancing.*

(*r.*) *Photography.*

General remarks on the course of instruction.

Mathematics are concluded at the Polytechnic and are not taught at all at Metz. No instruction is given either in military history or in landscape drawing, to the latter of which much time is devoted both at St. Cyr and at the Staff School. Dancing and photography are voluntary subjects, and the course in the latter is attended by very few. Swimming is compulsory only for those who can not swim. All the other subjects are obligatory, though not to the same extent for the students of the two arms respectively.

Difference in the instruction given to the Artillery and Engineers.

In military art, field fortification, military administration and legislation, topography and military sketching, German, veterinary science, riding, and fencing, the instruction is the same both for the Artillery and Engineers; in the other subjects there is more or less difference. This difference is more

* Detailed programmes of the course of lectures in most of these subjects are given in the Appendix, page 443.

marked in the second than in the first year, except in the case of drill, in which the instruction given to the students of the two arms differs almost from the outset. It can scarcely, however, be said that the studies during the first year are common to the two arms and that those during the second year are different. No absolute division of this kind is made in the course of instruction; even during the first year some lectures are given to one arm, which are omitted for the other; while, on the other hand, in the second year there are many lectures common to both. Throughout the two years all the students of the same division as a rule attend lecture together; but at various intervals certain portions of a course occur which are special either to the Artillery or the Engineers, and these lectures are not attended by the students of the other service. In the practical applications of the different courses—in the drawings and memoirs which depend upon them—there is also frequently considerable difference in the work required from the students of the two services. More than one-half, nearly two-thirds of the whole two years' course of instruction is common to both classes of students.

Difference in the theoretical studies.

In the subjects of theoretical instruction the difference of the studies lies chiefly in the courses of permanent fortification, geodesy, and artillery. In the two former the instruction given to the Engineers, and in the latter that given to the Artillery, is the more extensive. The principal parts of the instruction which are special to either arm are as follows:—

I. *Subjects special to the Artillery.*

Special instruction for the Artillery.

1. In the course of artillery lectures on gun and other kinds of artillery carriages, on the preservation of artillery *matériel*, on the principles of draught, and on the theoretical requirements of pieces of ordnance, are given specially for the Artillery students. In the applications of the course they are required to execute detailed drawings of guns and carriages, to solve questions relating to the effects of powder, recoil, and the ballistic pendulum, and to execute designs for guns to fulfil required conditions as to range, trajectory, final and initial velocity, &c. The only kind of drawing in the course of artillery which is required alike from the students of both arms is the detailed plan, section, and elevation of a siege battery.

2. In applied mechanics special instruction is given to the Artillery students on the machinery employed in artillery workshops. They are also required to design an artillery manufactory with the necessary machinery, giving in an accompanying memoir full details and specifications.

3. In physical science the difference is very slight, and is confined to chemistry. The instruction and practical manipulations of the Artillery students bear upon the analysis of powder and metals, while those of the Engineer students have reference to that of building stones, cements, water, and articles of food.

II.—*Subjects special to the Engineers.*

Special instruction for the Engineers.

1. In permanent fortification the course of lectures is nearly the same for both classes of students, but more instruction is given to the Engineers regarding the actual construction of works, the calculation of *remblai* and *deblai*, &c., as well as on the special duties of Engineer officers placed in charge of fortresses. The course of drawing for them is also much more extensive, especially in regard to the construction of mines. A detailed project for a permanent work on hilly ground is also required of them, as well as a design for the improvement of some existing fortress, with full working plans, specifications, and estimates. The drawings and projects specially required of the Engineers relate chiefly to the duties they may have to perform in the actual construction of works.

2. In geodesy the instruction of the Engineers is carried considerably higher than that of the Artillery. Ordinary military topography and sketching with the plane table and compass are taught alike to both arms. But in more scientific surveying the Engineers perform operations in triangulation, in the measurement of bases, and in levelling, and they take observations with the theodolite, in addition to the more ordinary observations with the sextant, which alone are practised by the Artillery.

3. In the course of architectural construction the same number of lectures are given to the students of both arms, but in the drawings connected with the course more time is devoted by the Engineers to designs for hydraulic constructions.

The difference in the instruction of the two arms is chiefly in the applications of the lectures.

It will be seen that the difference in the course of study pursued by the students of the respective services lies not so much in the actual instruction conveyed in the lectures, as in the work which is founded upon the lectures—in the various drawings, projects, and memoirs which are executed out of the lecture-room.

Number of lectures in the various subjects.

The following table shows the number of lectures in the various theoretical subjects given during the two years to the students of the respective arms :—

	Artillery.	Engineers.
Artillery	110	71
Permanent fortification	79	84
Military art, tactics, and strategy	15	15
Field fortification and field engineering*	31	31
Military administration and legislation	12	12
Topography and reconnaissance	21	21
Geodesy	3	12
Physical sciences	61	61
Applied mechanics	35	35
Architectural construction	65	65
German	150	150

* Including two lectures on the project for a siege (*simulacre de siége*).

The instruction in veterinary science is given during the riding lessons. The lectures are an hour and a half in length, with the exception of those in German, which last only three quarters of an hour. The numbers given in the table represent merely the actual lectures in the lecture-room, in addition to which at least four and a half hours daily are spent in the *salles d'étude*, in the execution of drawings, projects, and memoirs connected with the lectures; and there is besides, in connexion with most of the courses, more or less of out-door work.

Out-door work.

This out-door work is not, as at the Staff School, mainly confined to a certain period of the year, but is carried on all the year round simultaneously with the theoretical instruction. A great portion of the time so spent (exclusive of that occupied in drill and actual military exercises, of which more will be said hereafter) is devoted to drawing in one shape or another. The students are sent to take sketches and notes of military buildings, such as barracks, hospitals, bakeries, &c., from which detailed drawings (in plan, elevation, and section,) are subsequently made, accompanied by descriptive memoirs giving full particulars of the buildings: they visit foundries and workshops for the purpose of making drawings of machinery, which are accompanied by full descriptions of its working and calculations of its power. The students of the Artillery make similar drawings of carriages and other articles of artillery equipment from the objects themselves.

Surveying and military sketching.

In military surveying the out-door work (which succeeds a course of practice in military drawing in the *salles d'étude* and of instruction in the use of instruments) consists of:—

Two surveys with the compass of a district of from 600 to 800 square metres, the first on a scale of $\frac{1}{1000}$, the second of $\frac{1}{2000}$. The ground is selected so as to make the two surveys of progressive difficulty. Six days are occupied on the first, and eight on the second survey.

A survey with the plane-table of part of the fortifications of Metz (about 500 square metres in extent) on a scale of $\frac{1}{1000}$. Ten days are occupied in this operation.

The determination of the variation of the compass.

A rapid field sketch of about 2,000 or 3,000 square metres of ground with a plane-table and pocket clinometer, on a scale of $\frac{1}{10000}$. Six days are allowed for this work, during which time the students are entirely absent from the school.

A reconnaissance sketch of 2,000 or 3,000 square metres in the neighbourhood of Metz, made in connexion with the project for an attack of the fortress and the establishment of siege works. Four days are allowed for this work.

A reconnaissance of a road about 4 or 5 kilometres in length, showing the ground for 500 or 600 metres on each side. The sketch is accompanied by a tabulated report. One day only is allowed for this; the students start from the school in the morning, and have to bring in their work finished by five o'clock.

Mode of executing surveys and sketches.

In surveying, the students are generally sent two together, except for the rapid field sketch, on which they are employed singly. When their work lies near the town, they are generally sent out from six to half-past nine, and again from eleven to half-past four; when they have to go to a greater distance they remain out the whole day, and only come back in the evening. A whole division (*i.e.* all the students of the same year) are employed in this way at once, always under the charge of an officer of the staff, and generally also of a professor. These officers make constant rounds, and visit all the parties during the day. Sometimes for the more extended surveys the students are sent on longer expeditions, lasting five or six days, during which time they are entirely absent from the school; they are always accompanied by officers on these expeditions. The time allowed each day on the ground in surveying is from six to eight hours; at the expiration of this fixed time all the sketches are given up in their rough state to the officer of the staff under whose direction the work is going on, and one-third of the whole marks allotted to the subject are assigned by him for the manner in which the work actually done on the ground has been executed. The drawings are afterwards finished in the *salles d'étude*, and the remaining two-thirds of the marks are assigned for them in their completed state by the professor of topography. During the two years' course of study, 35 days are assigned to out-door work in military sketching, besides the time occupied in

Time devoted to surveying.

the completion of the sketches in the *salles d'étude*. The majority of the surveys appeared to be merely contoured plans without hill-sketching. The instruments chiefly used are either the plane-table or the compass, with various kinds of levelling instruments. The sextant is not employed, though its manipulation is explained. No practice is given in sketching either without instruments or mounted.

In geodesy the out-door work is chiefly confined to the Engineer students, and consists in the triangulation of a district of country, measurement of bases, operations in levelling, and astronomical observations.

Visits to military establishments.

In connexion with the course of physical science geological excursions are made in the neighbourhood, after which descriptive reports are written of the country visited. Advantage is also taken of the arsenal and other establishments in Metz to afford an insight into the processes employed in the manufacture of guns and ammunition, and the students are themselves required to perform practical operations in loading shells, fuzes, &c.

Absence of practical instruction in fortification.

Of actual out-door instruction in fortification and field engineering there is, comparatively speaking, very little. The instruction in fortification is almost exclusively theoretical. The designs for works are made entirely on contoured plans supplied to the students; the mode of tracing, profiling, and defilading a field-work are practised on the ground, but the actual processes of the construction of the work are not executed. Even the modelling of works in sand is not practised. The students carry out in practice (in what is called a sham siege of Metz) some of the operations of an actual siege; they reconnoitre the approaches to the town, and draw a plan on which the position of the various works of attack, depôts, &c. is shown, and they are required to trace on the ground the successive parallels. But none of the siege works are actually executed either by the students or even in their presence. They are taken to visit the various works in the engineer polygon, which have been executed by the men of the Engineers in garrison, but they do not see the works in process of execution, and receive no practical instruction in either sapping or mining. The same is the case with regard to siege batteries; drawings of these in detail are made on paper, and the works are seen in a finished state, but the process of construction is not shown. During their two years at the school the students never see the practical employment of a working party. Although lectures are given on the principles of road making, there is no out-door instruction in the subject. The applications of electricity to telegraphy and mining are neither practically exhibited nor even theoretically taught in the course of

Bridging taught practically.

physical science. Bridging is one of the few parts of field engineering which is practically taught; the students of both arms are practised in the construction of pontoon, trestle, Birago, raft, and boat bridges, and are themselves required to perform the work. They also have a very brief course of practice in making fascines and gabions, and in laying platforms, and are exercised on the ground in the method of laying out camps.

Instruction in drill different for the two services.

To drill and military exercises more time is devoted. The drill-books of cavalry, artillery, and infantry are studied by all, but in the practical portion of the drill a difference is made between the students of the two arms. The Engineers chiefly learn infantry drill, the Artillery that of their own arm. Cavalry drill is taught to both alike as part of the instruction in riding. The actual time devoted to infantry and artillery foot drill *in the ranks* appears very limited, amounting during the two years to only 57 hours for the sub-lieutenants of Artillery, and 76 hours for those of the Engineers. They are supposed, however, on admission to have some acquaintance with infantry drill, acquired during their previous training at the Polytechnic; and the Artillery have in addition instruction from time to time in the actual manœuvres of a battery in the field, guns, men, and horses being provided for them by the Artillery of the garrison. They are made to act as battery officers, and are said on leaving the school to be thoroughly able to drill a battery in the field. The Engineers have no practical instruction in artillery field movements; they have a short course of artillery foot drill, but the greater portion of their time is devoted to infantry exercises. Both here and at St. Cyr great importance is attached to instruction in giving words of command; every individual is frequently practised in drilling his comrades. Besides the actual drill in the ranks, the sub-lieutenants of both arms go through a course of standing gun drill with field and heavy guns; but the course for the Artillery is considerably longer than for the Engineers. A very trifling amount of instruction in what we should call the Repository course (manœuvres with gyns, shears, sling-carts, &c.) is given to all alike. All also have to go through a short course of musketry practice, consisting of two exercises, of two and a half hours each in the first, and three in the second year. In artillery practice, consisting of various kinds of gun and mortar practice, there are 10 exercises each year; all the operations of serving the guns are performed by the young officers themselves. The drill of the Artillery and Engineers is carried on separately under the superintendence of the majors of the respective arms. The major of Artillery has

the charge of the instruction in artillery practice. Riding school is attended by all alike, about twice a week the first year, and nearly every day the second year. Fencing is practised once or twice a week during the whole course. Riding and fencing.

The time allotted to the various kinds of out-door work during the two years is as follows:— Time devoted to out-door work.

I.—Practical Applications of the Lectures.

	Number of Attendances.	
	Artillery.	Engineers.
Tracing camps	1	1
Profiling and defilading a field-work	2	2
Operations of a sham siege, reconnaissance of approaches, and tracing parallels on the ground.	11	11
Surveying and field sketching	35	35
Visits to military establishments	8	8
Visits to foundries and workshops for the purpose of drawing machinery.	8	8
Sketches and measurements of ordnance and artillery *matériel* in the arsenal. (For the Artillery only).	17	—
Adaptation of fortification to hilly ground. (For the Engineers only).	—	9
Geological excursions	3	3
Practical operations in the laboratory of the arsenal	7	7
Geodetical and astronomical observations	1	6
Total attendances	93	90

Each attendance may, on an average, be taken at about six hours.

II.—Military Exercises.

	Number of Hours.	
	Artillery.	Engineers.
Infantry drill	17	63
Artillery foot drill (without guns)	40½	13½
Riding and cavalry drill (45 hours for the latter)	273	273
Gun drill with field and siege guns (54 exercises for the Artillery, 32 for the Engineers).	81	48
Musketry practice (5 exercises)	12½	12½
Artillery practice (20 exercises)	50	50
Construction of fascines and gabions (3 exercises)	7½	7½
Construction of platforms (2 exercises)	5	5
Pontooning and bridging (18 exercises)	37	37
Repository course (3 exercises)	4½	4½
Total number of hours	528	514

It will be seen that, except in regard to actual drill, the instruction given at Metz is to a great extent only theoretical. Much practical work, especially in field engineering, The course of instruction mainly theoretical.

still remains to be learnt by the officers after leaving the school on joining their regiments.

Extensive character of the course.

The course of study is spoken of as being almost too extensive to admit of everything being done thoroughly within the space of two years. The consequence is that many of the subjects are said to be learnt very superficially, and that little attention is paid to those which, like German and veterinary science, have comparatively small influence upon the order of merit. Few of the students care to do more in German than is sufficient to secure the necessary minimum of marks; scarcely any are said to be able to speak the language on leaving the school.

Marks given for all work done during the course count in the final examination.

As at the Polytechnic marks are given for all the work done during the school course, for every drawing, memoir, or composition of any sort, for the notes taken at lectures, and for the answers to the *vivâ voce* examinations (*interrogations*) which take place from time to time. Conduct, and proficiency in all practical work—in drill, riding, fencing, tracing works on the ground, constructing bridges, &c.—are similarly estimated. The marks for practical and out-door work are generally allotted by the officers of the staff; those for the memoirs and drawings executed in-doors by the professors. All these marks awarded by the authorities of the school have more or less influence on the final order of merit of the students. They are allotted by so many different individuals that probably even if any partiality occurred in exceptional cases, the general result would not be much affected. It is admitted, however, that some difficulty is found in estimating the credit due to individuals in the work executed collectively, which is the case with some of the practical operations, such as the construction of bridges, and tracing and profiling field-works. In such cases only a general estimate can be formed; high marks are given to one or two individuals who exert themselves much; a few who show evident awkwardness or negligence are marked low, but among those who occupy the intermediate position it is difficult to make any distinction. This is allowed to be a weak point in the system of marking pursued.

System of instruction.

The instruction is ordinarily given (as at the Polytechnic) by professorial lectures to all the students of a division (80 or 90 in number) at a time. In some courses, however, the divisions are broken up into smaller classes, as for instance for German lessons, for the practical manipulations in mineralogy, chemistry, and metallurgy, and for instruction in the use of the instruments employed in surveying and in geodetical and astronomical observations. Lithographed copies of the general outlines of the lectures in each subject

are supplied, and the students are required to take very full notes of the lectures, and periodically to produce their note-books. Though no fixed text-books are employed considerable use is made of the works in the school library. As a rule, there is each day a general lecture in one subject, which is followed (according to the nature of the course) by study and drawing in the *salles d'étude*, by work in the laboratory, or by out-door operations. The drawings which are executed are in nearly all cases accompanied by memoirs, descriptive reports, or detailed calculations. Though there are no *répétiteurs* at the school, frequent *vivâ voce* examinations (*interrogations*) by the professors are held in each subject; on an average there is an *interrogation* to every five or six lectures. The students, however, are not, as at the Polytechnic, called up unexpectedly for these examinations; notice is always given beforehand of the time at which they will take place and preparation for them is expected.

Daily routine.

The ordinary routine of the day's work is much as follows:

Morning roll-call takes place at half-past 5 or 6 according to the season. The students are then free till 8, with the exception of a certain number who are required for riding or German. Attendance at instruction in both of these subjects is by sections of about 20 students each. Two sections of one division are thus employed every morning, each section going for one hour to riding school, and for one hour to German. From 8 to half-past 9 there is a lecture for both divisions in some subject almost every day. On days when there is no lecture this time is spent in the *salles d'étude*. After the lecture an interval of an hour and a half is left free for breakfast. At 11 all assemble in the *salles d'étude*, where they remain engaged in drawing and writing reports until half-past 3. From half-past 3 to half-past 5, there are generally German and riding for two sections of one of the divisions as in the morning. Some also go to fencing at this time; the remainder, on days on which there is no drill, are free. Drill and other practical military exercises are carried on either on the morning before the day's lecture, or in the afternoon from half-past 3 to 6, by the division whose sections are not employed in German or riding. Such exercises do not take place regularly every day, but are ordered from time to time when the weather and other circumstances permit. After half-past 5 or 6 o'clock at the latest every one is free until 11 at night. The ordinary every day *in-door* work—the minimum exacted—thus occupies seven hours ($1\frac{1}{2}$ hour's lecture, $4\frac{1}{2}$ hours' *salles d'étude*), which is increased to eight hours on the days on which German is done; drill, riding, and fencing, are all in addition to this, though they do not occur for all every day.

Break afforded by out-door work.

The ordinary routine is from time to time interrupted by out-door work, and by the expeditions for visiting military establishments, making surveys and reconnaissances, and other purposes.

Vacations.

There is only one vacation during the two years' course, of about three weeks in length, which takes place in October, on the conclusion of the annual examination. The only other free days are Sundays, and some of the chief *fêtes*. Occasionally also during the surveying expeditions, if a student finishes his work in less than the time allotted to it, he is allowed to go away until the expiration of this period. At other times leave is very sparingly given.

Greater independence in study allowed at Metz than at other French schools.

The students of Metz seem to have more freedom in regard to study than at any other French military school. They are left much more to themselves than the younger pupils at the Polytechnic or St. Cyr, and even more than the young men at the Staff School, who are of a similar age and military position. At the Staff School, the whole day from 6 in the morning to 5 in the afternoon is occupied in study or drill, and except during an hour's interval allowed for breakfast, no one can leave the school buildings during the daytime. At Metz, the time is less closely occupied; the students, when not required for study or drill, are allowed to go into the town, and their work for the day sometimes ends at half-past 3. They are permitted and even required to study by themselves in private. All drawings must be executed in the *salles d'étude*, but the time spent in the *salles* is not supposed to be sufficient for the preparation of the reports and memoirs, a great part of which are written by the students in their own rooms during their free time. Little time, however, appears to be spent in private study beyond that absolutely necessary for the execution of the allotted tasks. "The students," it was said, "are not idle, but after the severe course at the "Polytechnic, where they have been, as it were, forced in a "hot-house, there is a sort of reaction, and they show more "disposition for enjoying their newly acquired liberty than "for *voluntary* study." Their evenings are generally spent either at the theatre or in the *cafés* of the town, and it is only occasionally, when an *interrogation* or the yearly examination is at hand, that they come in to work at night.

Discipline.

The students subject to military law.

The students are in every respect subject to military law, and to the ordinary penal code for officers. The immediate superintendence of the discipline is more especially the duty of the officers of the staff; but all the military professors have the same powers of punishment as the staff officers, and

All officers employed at

are equally charged with the duty of enforcing obedience to all regulations and of punishing any irregularities, not only during hours of study, but even outside the school.* The drawing master's duties scarcely bring him into contact with the students, so that there is practically only one civilian instructor, the professor of German; he has no power of punishment, but immediate attention is paid to any report made by him of misconduct on the part of the students. During all lectures, even those of the military professors, and during the attendances in the *salles d'étude*, one of the officers of the staff is present, whose special duty it is to maintain a surveillance over the conduct of the students; so that the professor is relieved from the task of maintaining order in addition to lecturing. One of the field officers of the staff is on duty each week for the purpose of exercising a general superintendence over the discipline; and in addition the captains take by turns, for a fortnight at a time, the duty of carrying out all details in regard to maintenance of order within the school; the officer on duty for the time being is required to sleep in the buildings. There are no gradations of rank among the students themselves; none of them have any power or responsibility in regard to discipline over the others.

the school have powers of discipline.

Maintenance of discipline during lectures and studies.

Although the young men are actually officers in the army, holding commissions as sub-lieutenants, they are in many respects subject to considerable restrictions. All who are lodged in the school are obliged to be in by 11 at night, after which hour they are not allowed either to keep strangers with them or to leave their own rooms. Those who live in the town are forbidden to absent themselves from Metz for the night without leave, and they are only allowed to live in lodgings which are approved of by the commandant. Smoking within the school buildings is only permitted in the quarters occupied by the students; gambling either within the school or outside is strictly forbidden. No one is allowed to keep a carriage, and horses can only be kept with the permission of the commandant. Something approaching to a proctorial system exists for the purpose of exercising control

Strict regulations with regard to conduct.

* "Le soin de veiller dans l'intérieur de l'établissement comme à l'extérieur, "à la stricte et constante exécution des règlements militaires en vigueur, "et des dispositions particulières adoptées pour l'Ecole d'Application, est "spécialement confié aux officiers de l'état-major de l'école ainsi qu'aux "professeurs militaires." "Tous les officers de l'état-major, ainsi que les "professeurs militaires, lorsqu'ils sont en présence des élèves, soit à l'intérieur, "soit à l'extérieur de l'école, doivent toujours se considérer comme étant de "service. En conséquence, ils doivent réprimer ou punir immédiatement tout "manquement au règlement, ou toute inconvenance de conduite."—(Extracts from the regulations of the School.)

over the conduct of the students in the town. Whenever representations take place in the theatre, an officer of the school is always on duty to maintain order, and the same measure is sometimes adopted in the *cafés* which are frequented at night. The young men are not allowed to go to the public dancing-rooms in the town. The *restaurants* where the messes are established are subjected to a species of surveillance; the maximum price of the messing is fixed by the Commandant; this price cannot be exceeded, and the bills are paid by the treasurer of the school. Any establishment where it is found that the students have been allowed to contract private bills is put out of bounds. A young man getting into debt is punished by being deprived of all leave, and being obliged to take his meals in the school; a partial stoppage of his pay is also made till the debt is paid. General meetings for the purpose of giving entertainments are forbidden. Formerly there were certain bounds extending to a distance of two or three miles from the town, beyond which the students were not allowed to go without special permission; but with the facilities for getting to a distance now afforded by the railways, it has been found impossible to maintain this restriction, and so long as they are present at the school at the hours required, they are allowed to go where they please.

Conduct of the students in public.

Generally speaking only such conduct in the town would be interfered with as would cause a public scandal or tend to create a disturbance. The behaviour of the students in the streets appears to be quiet and gentlemanlike; they are always obliged to appear in uniform, and seem in general to conduct themselves exactly like officers. Occasionally they are said to be rather noisy in the *cafés*, and the intervention of the officers becomes necessary. Immediate attention is paid to complaints of misconduct towards civilians, and the offender is severely punished. No difficulty is experienced in enforcing discipline; the necessity for inflicting the more serious punishments seldom arises, and no instance of any attempt at collective insubordination has ever occurred.

Comparative absence of moral control.

Apart from mere purposes of discipline no attempt is made to exercise any moral control over the students; the relations between them and the officers are quite of a general character; even the captain attached to each brigade has little special responsibility in regard to the members of it, his duties being confined to looking after their uniform and pay. No chaplain is attached to the school, and there is no compulsory attendance at religious service; on Sundays the students are free from after morning roll-call until 11 at

night, except when a parade happens to be ordered by the general.

The punishments which can be inflicted are as follows: Punishments.

1. Simple arrest, consisting in the confinement of a student to his own room, but with permission to go out for an hour for breakfast, and an hour and a half for dinner. Arrest.

This punishment can be inflicted by every officer attached to the school, to the following extent according to his rank:

By a Lieutenant	for	4 days.
„ Captain	„	8 „
„ Field officer	„	15 „
„ the Second Commandant and Commandant		30 „

2. Close arrest in the arrest-room, where the offender is kept in actual confinement.
3. Imprisonment in a military prison. Imprisonment.

These two punishments can only be inflicted by the Second Commandant and the Commandant, in the following proportions:

By the Second Commandant	for	15 days.
„ Commandant	„	30 „

4. The general commanding the garrison of Metz can inflict imprisonment either in a military prison or in a fortress for a period of 60 days.

A student can only be dismissed from the school by the order of the Minister of War. Those so dismissed are either temporarily debarred from military employment (*la mise en non activité par suspension d'emploi*), or definitively excluded from the army (*la mise à la réforme*). For very serious offences a student is also liable to be tried by court martial. Dismissal.

Simple arrest is the punishment most ordinarily inflicted. Every infraction of the rules, however slight, is punished with it. Lateness at morning roll-call or in coming in at night, inattention of any kind either at study or drill, neglect in sending in drawings or other kind of work at the appointed time—all entail arrest. Simple irregularities are dealt with by the officer under whose notice they come; more serious offences are passed on to a higher authority. A report of all punishments inflicted is sent in daily through the superior officers to the Commandant, who, if he thinks the punishment insufficient in any case, has the power of increasing it. Arrest entailed by every kind of irregularity or neglect of study.

Marks are given for good conduct, some of which are assigned by the Commandant and Second Commandant, and some by the officers of the staff who have the more immediate control over the discipline. In apportioning these marks, as well as those for all other subjects, the same scale of credits System of good conduct marks.

from 0 to 20 is employed as at the Polytechnic. The number of marks to be allotted to each student on account of conduct is determined partly by the daily punishment reports, and partly by the officers' knowledge of his regularity and attention to his duties. Other marks (called "*notes d'appréciation*") are also given by the same authorities to each individual for his general behaviour, gentlemanlike conduct, smartness, and military aptitude. The value attached to these two classes of conduct marks appears in each year to amount to more than one-sixth of the total number of marks awarded by the school authorities.

And of marks for general behaviour and smartness.

Idleness like other offences is punished with arrest. Every student who for any *interrogation*, drawing, or any other kind of work obtains a less number of marks than 8 out of the 20 assigned to it (or two-fifths of the total), is, as a matter of course, placed under arrest for a certain number of days; and each case of arrest entails a further loss of marks for good conduct. It seems a general principle at the school that all work, for the execution of which marks are awarded, should entail liability to arrest for negligence in its performance. The only special punishment attached to idleness is that of being kept up in the vacation, which is inflicted on those whose drawings or other work may be in arrear. This is said to occur in about six or eight cases every year. Misconduct is not ordinarily punished in this way. On the other hand, idleness, however confirmed it may appear to be, is never visited with dismissal from the school unless it results in a failure to obtain the required minimum of marks in the examination at the end of the year.

Punishments for idleness.

Examinations.

In addition to the periodical *interrogations* which are held by the professors, there is now a general examination at the end of each year in the subjects of that year's course of instruction. Formerly there was only one general examination which took place at the termination of the two years' residence at the school. It was found, however, that if the examination in the whole of the subjects was delayed until the end of the second year, the mass of work to be gone over was so great that it could not be thoroughly mastered, and the students came up to the examination insufficiently prepared. An examination has in consequence been lately introduced at the end of the first year, and the final examination before leaving the school now embraces only the subjects taught during the second year. An interval of at least three weeks after the termination of the lectures is allowed for voluntary

General examinations at the end of each year.

Time allowed for preparation

study in preparation for the annual examination. During this period the students are obliged to attend either in the *salles d'etude* or in the school library from half-past six to eight in the morning, and again from eleven to half-past three; they are, however, during these hours allowed to study whatever subjects they please. The professors are in attendance to answer questions and explain difficulties. The lectures last autumn ended on the 31st August, and the examinations began on the 20th September. for the examinations.

Each year, before the examination takes place, the Council of the school draws up a classified list of the students of each division in order of merit as determined by the marks that have been awarded to them by the authorities of the school. The marks given for conduct, for general bearing, for riding, drill, fencing, and other military exercises, as well as those for the periodical *interrogations* and for the drawings and other work executed during the year, all enter into this classification. A somewhat peculiar system is adopted in determining the relative value to be assigned to the various subjects. The usual scale of credits from 0 to 20 is employed to represent the merit of each production, but the "co-efficient of importance," instead of being (as is usually the case) a fixed number, is dependent on the time allotted for the execution of the work; it is arrived at by dividing the number of hours occupied in the work by 20, the maximum number of marks which can be obtained. Thus if 160 hours were allowed for the completion of a drawing and memoir, the "co-efficient of importance" would be $\frac{160}{20} = 8$; and if the professor had marked the drawing with 15 (good) the total value attached to it would be 8×15 or 120. The influence exercised by the marks thus awarded by the school authorities amounts to one-third of the whole amount in the first year, and to about one-fourth in the second year. Preliminary classification made by the school authorities. Influence of the school work on the final result.

The examinations of both divisions at the end of each year are conducted by a board of officers entirely independent of the school; the board is composed of seven members, under the presidency of a general of division taken alternately from the Artillery and Engineers, the remaining members consisting of two brigadier-generals and four field officers, taken equally from the two services. The four field officers are specially charged with the duty of examining. The examination of the two divisions goes on simultaneously, the examining board being sub-divided for this purpose. The senior division is examined in the presence of the president of the board and one of the brigadiers, the junior division in the presence of the other brigadier. The subjects of the Mode of conducting the annual examinations.

year's course of instruction are arranged in two series, in each of which the students are examined on separate occasions. All the students of a division are first examined in one of the parts into which the subjects of examination are divided; and when the examination of the whole in this branch has been finished, the examination in the second branch is commenced; so that about 10 days elapse between the first and second examinations of the same student.

The examination entirely *vivâ voce*.

The examination is exclusively *vivâ voce*, but the candidates are frequently called upon to illustrate their answers by descriptive diagrams on the black-board. The examination of each individual occupies about an hour. Lots are drawn beforehand to determine the order in which the candidates are to be examined, and they are also made aware of the branches of study on which they will be questioned on each occasion. The examinations at the end of both years are conducted exactly in the same way, except that at the end of the second year all the drawings executed during both years are inspected by the examiners, and that the students are subjected to a practical examination in drill, and required to put troops through various evolutions in the presence of the board. Proficiency in drawing and drill are not taken into consideration in the first year's examination.

The following description of the method of conducting the final examination is given in the Report of the Commissioners of 1856 :—"It takes place in a room set apart for the purpose, "with a small interior room in connection with it, into which "the members of the board retire to deliberate at the end of "each student's examination. The student under examination "is specially questioned by the examining officer in his "subject, and occasionally by the president or any other "member of the board that may wish to do so, for about an "hour. As soon as the examination of the student has been "concluded, the board retire to the adjoining room and compare their notes of the credits they have severally awarded "to the student under examination, and they also examine "his drawings, sketches and memoirs relating to the subjects "on which he has been questioned. They severally note the "credits to which they consider him to be entitled for them, "and adopt the general mean."

The nature of the questions put, depends a good deal on the examiner; a few questions of detail are asked, but little importance is said to be attached to them, and a candidate's ability is estimated mainly by his general knowledge and acquaintance with principles.

On the conclusion of the examinations, the board draws up

a classification in order of merit of the students of each year, in which the Artillery and Engineers are arranged on separate lists. The classification of the junior division is determined by the total number of marks gained, firstly, in the examinations in the two branches of instruction before the board, and, secondly, in the preliminary classification made by the authorities of the school on the ground of the work executed during the year. The examination before the board has in this year double the value which is attached to the school work. The classification of the first year's students determines the order of their promotion to the senior division. In determining the final classification of the senior division at the end of the second year, the importance of the examinations before the board is increased to three times that of the classification of the school authorities. The following additional elements are also this year taken into consideration:—(1.) the drawings executed during both years, which have a value equal to one-twentieth of that attached to the examinations and the general school work combined; (2.) proficiency in drill, as estimated partly by the officers of the school, partly by a practical examination before the board—half the marks gained in this subject being placed to the credit of each student; (3.) the results of the first year's classification, half the marks obtained in which are also carried forward. The sum of all these various marks establishes the final classification of the students quitting the school (*classement de sortie*), which determines their seniority in their respective services.

Classifications founded on the examinations.

It does not appear that any fixed standard is exacted as a condition of passing either examination; the decision is mainly left to the general impression formed by the examining board of a candidate's proficiency. Those who in either year in the classification made by the authorities of the school fail to obtain two-fifths of the total number of marks, are brought to the notice of the board with a view to their being subjected to a more severe examination. If they fail to satisfy the examiners of their division, they are re-examined before all the seven members of the board, who decide whether they should be allowed to pass. The board are said generally to take a lenient view of such cases, and except in occasional instances of very bad conduct, the candidate is either allowed to pass, or is recommended to the Minister of War for permission to remain another year in the same division. It rarely happens that a student is either dismissed from the school, or fails to obtain his appointment, unless he has for two years in succession failed to satisfy the

No regulated minimum number of marks required.

Course pursued with those who fail to pass the examination.

examiners—no one being allowed to remain more than three years at the school. The number of ultimate failures is said not to exceed two per cent. The few who are dismissed from the school without being promoted to the senior division, or who fail on a second trial to pass the final examination, are ineligible for appointments in the artillery and engineers, and are placed on a sort of retired list (*mis en non activité par suspension d'emploi*); they still continue in the army and have the rank of *sous-lieutenants*, but belong to no particular branch of the service, and are left at the disposal of the Minister of War. They are in general eventually given commissions either in the cavalry or infantry.

Modified course for officers promoted from the ranks.

A modification of the course of instruction is made in the case of those officers promoted from the ranks who are admitted to the school. They are exempted from studying the more scientific parts of the courses of artillery, mechanics, construction, and geodesy, and at the end of the two years, instead of being classified with the other students, they have to pass merely a qualifying examination.

Vacation for the junior division after the examination.

The students of the junior division on the termination of their examinations are allowed to go away until the 5th of November. The examinations of all are generally concluded by the middle of October, so that every one may reckon on having at the least about three weeks vacation. Those who pass the final examination obtain the rank of second lieutenant on leaving the school, and generally join their regiments in January.

The senior division receive appointments.

The competition at the school much less keen than at the Polytechnic.

The competition at the school does not seem to be very keen, certainly nothing approaching to that at the Polytechnic. The students are said generally to arrive at Metz somewhat exhausted by the severe course of study to which they have been subjected for two years previously; added to which the stimulus which they had for competition at the Polytechnic no longer exists. Their future career is already determined, and provided an individual feels sure of passing the final examination he has little inducement to hard exertion. No prizes or *bourses* of any sort are to be won at Metz. The only advantages of taking a high place on leaving the school are,—firstly, that a choice of regiments is allowed in such cases, and secondly, that the seniority of the young officers in the service, and consequently their future promotion, is affected by it. These are the only incentives to competition, and generally speaking the first has the greater weight with the students, many of whom fancy particular regiments and pleasant quarters; the effects of their work upon their future promotion are too remote to have much influence with them.

As an illustration of the comparative absence of competition in the school it was mentioned that little anxiety is shown by the students to ascertain the marks they obtain in their school work, and that no list of the marks is publicly posted up. From having already been for two years together at the Polytechnic, the students know each other's calibre, and certainly after some six months at Metz a tolerably correct idea can be formed of the results which the final examination will exhibit. The relative positions of the students on leaving the School of Application are not indeed always the same as those in which they entered it from the Polytechnic; the practical work, especially in the way of riding and drill, introduces some changes in the order of merit, some of the best Polytechnic students (as noticed also at the Staff School) showing a deficiency in natural aptitude for practical exercises. Among those, however, who have similar practical qualifications, and who work moderately, the positions held on entering the school are generally maintained on leaving it. "It is not so much," it was remarked, "that places are "*gained*, as that they are *lost* at the School of Application."

Subsequent Instruction and Employment.

Practical instruction after leaving the school.

After leaving the School of Application the young officers of Artillery and Engineers have still most of the practical duties of their respective services to learn on joining their regiments. Those of Artillery go through a course of practical instruction in the construction of batteries, in pontooning,* and in gun practice, in addition to learning the ordinary regimental duties connected with drill and interior economy. "The young Engineer officers are employed with the men "of their regiments, and with them pass through courses of "practical instruction in the field, in sapping, mining, field "fortification, sham sieges, bridges, and castrametation." It is also after joining their regiments that they learn telegraphy and photography.

The regimental schools of Artillery and Engineers utilised for this purpose.

For these purposes of practical instruction use is made to a certain extent of the regimental schools of Artillery and Engineers, which exist in all the towns which form the headquarters of an Artillery or Engineer regiment. The main object of these regimental schools is to give a fair ordinary education and some amount of scientific instruction to non-

* The distinction of duties in regard to bridging in the French service is that the Artillery are charged with the transport of the pontoon train, and the formation of bridges with materials which are carried with the army. The Engineers have the duty of establishing all bridges formed from materials found on the spot.

commissioned officers and privates, as well as to officers who have been promoted from the ranks; but advantage is also taken of them to complete in certain practical subjects the professional training of the young officers who have passed through the School of Application at Metz. In this respect they bear some analogy to the Royal Engineer Establishment at Chatham. The ordinary rule is that officers of both arms should continue doing regimental duty and going through a course of practical instruction until they are promoted to the rank of second captain. On attaining this rank, but not before, officers of Artillery are detached from their regiments, and sent to the various arsenals and manufacturing establishments, in order to become practically acquainted with all the processes connected with the manufacture of artillery, small arms, and other *matériel* of war; on being promoted to the rank of first captain they again rejoin their regiments. Officers of the Engineers, on the other hand, after reaching the rank of second captain are generally employed apart from their regiments on the *état-major* of the Engineers in charge of fortified places, or in the superintendence of new works in process of construction. These rules, however, are not universally observed; every year some five or six officers of the Engineers are selected for employment on the *état-major* even before they have been promoted to the rank of second captain, while in the Artillery it sometimes, though rarely, happens that an officer, even after obtaining this rank, is not sent to the manufacturing establishments, but continues to do regimental duty. In time of war, Engineer officers, in addition to their regular duties, are frequently employed to assist the staff in surveying and making reconnaissances.

The officers generally do duty with their regiments until they become second captains.

The Artillery are afterwards sent to manufacturing establishments.

The Engineers are employed in charge of buildings, &c.

Promotion from the ranks in the scientific corps.

In the French service, as has been already stated, one-third of the commissions are, by the general law regulating promotion in the army, reserved for officers promoted from the ranks. In the Infantry and Cavalry the promotions from the ranks are very much in excess of this proportion; in the Artillery they are generally limited to it; but in the Engineers, owing to special regulations which apply to this service, they fall somewhat below it. The rule is that the whole of the officers employed on the staff of the Engineers,—*i.e.*, in charge of fortresses, and in the superintendence of works—and one-half of the regimental officers should be supplied by those who have passed through Metz, the remaining half of the regimental officers being alone obtained by promotion from the ranks. The proportion between the two classes of officers at present required, in order to maintain this arrangement, is

Special regulations in the Engineer service.

such that out of every 17 officers in the Engineers about 13 come from Metz and only four are promoted from the ranks. Officers of Engineers promoted from the ranks who have passed through the modified course at Metz are included among those who are considered qualified for employment on the staff, and they are occasionally, on being promoted to the rank of second captain, appointed to the charge of places where no very important works are in the course of construction.

The pay of officers of Artillery and Engineers is the same, and neither service has any very marked advantage over the other. The duties of officers of Engineers in time of peace are more of a civil character, as in our own service; and the rank of captain is generally obtained about three years earlier than in the Artillery, though, at the same time, subseqnent promotion is slower. There appears to be some slight preference shown among the students at the Polytechnic for the Engineers; when the last appointment to this corps has been selected, several of the Artillery appointments in general still remain unappropriated.

Respective advantages of the two services.

General Remarks on the School of Metz.

The most important alteration in the course of instruction at Metz which has been made since the Report of the Commissioners of 1856, is the introduction of the examination at the end of the first year, with which the portion of the course studied during that year is now entirely concluded. The change seems to have been introduced with the object of preventing a great pressure of work at the close of the two years, and of securing a more thorough revision of the subjects studied.

Few alterations in the school since 1856.

The question of giving an entirely separate training to the students intended respectively for the Artillery and Engineers was considered in France by a Commission appointed in 1854 to enquire into the working of the school of Metz. The question was at that time decided in the negative, and does not appear to have been since reopened. The grounds on which the maintenance of a single school for the instruction of candidates for both corps is advocated are, partly, the saving of expense which results from such an arrangement, but mainly the importance of establishing a perfect understanding between the two services. Marshal Vaillant, the Minister of War, in his report upon the proceedings of the Commission above alluded to, says:—

Reasons for giving a common education to the Artillery and Engineers.

"Since the School of Application has been instituted to form officers of Artillery and Engineers, is it desirable

Recommendations of a

Commission appointed to consider the question in 1854.

"to separate the instruction given to the pupils of the two "corps, and to look solely to the particular requirements of "each? The Commission has not thought this desirable. "Allowing, as a general proposition, that it is well to direct "the instruction of young men with a view to the special "service for which they are destined, it has argued wisely "that there are considerations of a higher kind which decide "in favour of giving instruction in common, as far as possible, "to the pupils intended for the two corps. I agree in all "respects with the view taken by the Commission. The point "of the greatest importance to the success of enterprises "undertaken in common by the Artillery and Engineers "is, that there should be a perfect understanding between "two services which always have to support one another, "and sometimes to supply each other's places. The best "method of obtaining such an understanding on all occa- "sions, and of securing that unity of view so necessary to "the good of the service, is undoubtedly to form the officers "of the two services in the same school, and to give them, "as far as may be, the same military instruction and prin- "ciples. In adopting this fundamental principle, the "Commission has thought that it was not desirable to push "the application of it beyond a certain point, and it has "therefore very wisely kept up a separation with regard to "certain lessons and a small number of exercises which "have appeared to have a special bearing upon the particular "services. It has acted in the same manner in all that "concerns the practical part of the military instruction, "which is to be given to the pupils in conformity with the "directions followed in their respective corps."*

It is on these principles that the instruction given to the students of the two services is regulated.

Opinions entertained by French officers as to the arrangements of the school.

The chief points in regard to which the system at Metz seems to be considered as open to criticism, are, firstly, the absence of any limit to the tenure of the professorships, and secondly, the too extensive character of the course of study. At the same time, in regard to the latter point, it is admitted that it is difficult to know what portions of the course could be omitted without disadvantage to the general results of the instruction. In other respects the working of the school appears to be considered highly satisfactory.

The Polytechnic as a preparation for Metz.

In the account of the Polytechnic, reference has been made to the difference of opinion which exists in the French army in regard to the necessity of the high mathematical training of the Polytechnic as a preparation for the scientific

* Quoted in the Report of the Commissioners of 1856.

corps. An inferiority in practical work is certainly noticed both at Metz and at the Staff School in some at least of the most distinguished Polytechnic students. On the other hand, it seems to be generally considered by those engaged in instruction at Metz, that though the amount of mathematics taught at the Polytechnic may not be absolutely necessary to enable the students to understand the course at the School of Application, it would be unwise to diminish it. Opinion appears to be decided as to the impossibility of allowing general admission to the School of Application without having previously passed through the Polytechnic course.

THE SPECIAL MILITARY SCHOOL OF ST. CYR.

(*Ecole Impériale Spéciale Militaire.*)

General Description.

Education of officers for the Infantry and Cavalry.

The preparatory education of officers of the Artillery and Engineers who do not rise from the ranks is, as has been seen, conducted at the Polytechnic and the School of Application at Metz. Commissions in these services can only be obtained, either by passing through these two schools or by serving in the ranks. "The regulations for the Infantry, Cavalry, and "the Marines are of the same description. There are in these "also the same two ways of obtaining a commission. One, "and in these services the more usual one, is to rise from the "ranks; the other is to pass successfully through the school "at St. Cyr. Young men who do not enter as privates "prove their fitness for the rank of officers by going through "the course of instruction given, and by passing the ex-"aminations conducted in this, the principal, and putting "aside the School of Application at Metz, the one special "military school of the country. The earliest foundation of "the kind in France was the École Royale Militaire of 1751. "Like most other similar institutions of the time, it was "intended for the young nobility. No one was to be ad-"mitted who could not prove four generations of *Noblesse.* "The pupils were taught free of charge, and might enter at "eight years old. Already, however, some marks of compe-"tition are to be discerned, as the best mathematicians were "to be taken for the Artillery and Engineers. Buildings "on the plain of Grenelle (the same which still stand, occu-"pying one end of the present Champs de Mars, and retain-"ing, though only used as barracks, their ancient name) "were erected for the purpose. The school continued in this

Early foundations for military education in France.

" form till 1776, when it was dissolved (apparently owing to " faults of discipline), and replaced by 10 colleges, at Sorrèze, " Brienne, Vendôme, and other places, all superintended by " ecclesiastics. A new Ecole Royale Militaire, occupying " the same buildings as the former, was added in 1777. This " came to an end in 1787; and the 10 colleges were sup- " pressed under the Republic. A sort of camp school on the " plain of Sablons took their place, when the war had broken " out, and lasted about a year under the name of the Ecole " de Mars. Under the Consulate in 1800, the Prytanée " Français was founded, consisting of four separate colleges. " The name was not long after changed to the Prytanée " Militaire; and after some time the number was diminished, " and La Flèche, which had in 1764 received the youngest " pupils of the old Royal Military School, became the seat of " the sole remaining establishment; which subsequently sunk " to the proportions of a mere junior preparatory school, and " became, in fine, the establishment which still retains the " title, and is called the Prytanée Militaire de La Flèche. A " *special* military school in the meantime had been set up at " Fontainebleau in 1803, transferred in 1808 to St. Cyr, " and thus taking the place of the Prytanée Militaire and " of its predecessor, the original Ecole Royale Militaire, " gradually assumed its present form."*

Origin of St. Cyr.

Services to which the school gives admission.

The school of St. Cyr—the Sandhurst of France—gives direct admission to the Cavalry, Infantry, and Marines, and a certain number of its best pupils are given the option of admission to the Staff School, after two years instruction at which permanent appointments in the Staff Corps can be obtained. Rather more than one-third, but certainly less than one-half, of the first commissions in the Cavalry and Infantry are at present given to St. Cyr; the Staff Corps is almost entirely recruited from the pupils of the school.

Duration of the course.

The course of study at St. Cyr lasts two years; no one is allowed to complete it in a shorter time, and the rule (though apparently not very strictly enforced) is, that the regulated period can only be exceeded in special cases of illness.

Number of pupils.

The usual number of cadets is 600, of whom 300 are admitted each year. Of this number about 30 annually are appointed to the Cavalry, 10 to the Marines (the appointments in which are generally given to the lowest on the list at the final examination), and about 20 gain admission to the Staff School.† At the present time the school is hardly up to

* Report of the Commissioners of 1856.

† In consequence of alterations made in regard to the organization of the Staff Corps, in July 1869, the number of St. Cyr pupils admitted each year to the Staff School will in future be increased. See Appendix, page 520.

its full strength, as there appear to be not much more than 570 cadets. It was at one time the custom that cadets appointed to the Cavalry should, on leaving St. Cyr, be sent for two years to the Cavalry School at Saumur. This arrangement, however, was changed some years ago; a special cavalry department, to which indeed great attention is paid, now exists at St. Cyr; those who desire to enter the Cavalry are required to declare their wish at the time of admission to the school, and are at once tested in riding, to ascertain their fitness for the mounted service. If likely to prove good riders they are accepted as recognised candidates for the Cavalry, and go through an entirely distinct course of drill. On quitting the school they at once join their regiments like those appointed to the Infantry.

Cavalry department.

Though the pupils at St. Cyr belong perhaps, on the whole, to a higher social class than those of the Polytechnic, and have generally in times of political excitement been distinguished by more conservative sympathies, the school cannot be said to be confined to the sons of the aristocratic or even of the wealthy classes. Admission to it, being entirely dependent on a competitive examination in the ordinary subjects of instruction at the Lycées, is within the reach of any one who has had the education of these schools, however humble his origin; and though payment is required from those who are able to afford the expense, it is either wholly or in part dispensed with in the case of any whose means are proved to be insufficient. Indeed it would seem that for some time past the old families of France have shown a decided indisposition to allow their sons to enter the school; at the same time, this feeling is said to be now diminishing, and each year a larger proportion of members of the aristocratic classes are found among the newly admitted pupils.

Classes from which the pupils are drawn.

The organisation of St. Cyr, like that of the junior school at La Flèche, appears to have frequently called for the careful consideration of the government, and Commissions have from time to time been appointed to inquire both into the system of discipline and the course of instruction at the school. At one time the question was mooted of confining admission to the school to the non-commissioned officers of the army, which would of course have had the effect of making service in the ranks the universal condition of obtaining a commission, and would to a certain extent have assimilated St. Cyr to the Prussian War Schools. This proposition seems to have been strongly opposed, on the ground that it would lead to the army being officered exclusively from the lower classes. The present organisation of the school is the result of the recommendations of a Commission appointed in 1861,

Commissions of inquiry into the system of the school.

Latest Commission in 1861.

and presided over by Marshal Randon, the Minister of War at that time. The alterations then introduced seem to have been directed towards the improvement both of the discipline and the education. The most important changes consisted in deferring the age of admission from 16 (as it had been previously) to 17, in making the pupils completely subject to military law, in placing both the annual examinations in the hands of examiners entirely independent of the school authorities, and in offering increased inducements to attract a superior class of professors and officers to the school. At the same time a more literary element was introduced both into the entrance examination and into the course of instruction at the school; greater encouragement was given to the study of modern languages; and a wish seems to have been shown to elevate the tastes of the pupils by affording facilities for the cultivation of general literature, and accomplishments, such as music, singing, and dancing. In the internal regulations of the school various modifications were made, with the object both of rendering the discipline more strict and of attaching increased privileges to good conduct and industry.

Changes introduced at that time.

Admission to the School.

Conditions of admission to the school.

Admission to the school is determined by competitive examination. The ordinary conditions of admission to this examination are:—

(1.) That the candidate is by birth or naturalisation a French subject.

(2.) That he will be at least 17 on the 1st of October, and was not more than 20 on the 1st of January of the year in which the examination takes place.

(3.) That he has taken the degree either of *bachelier ès sciences* or *bachelier ès lettres* *—the degrees which terminate the usual course of instruction at the Lycées. At one time the former, or mathematical degree was invariably exacted, but the classical diploma is now equally accepted, and a candidate who has taken both degrees is allowed the advantage of 50 additional marks in the examination.

Admission of non-commissioned officers

Non-commissioned officers and soldiers in the army between 20 and 25 years of age are also admitted to the examination,

* These degrees are somewhat similar to the certificates granted in the Oxford and Cambridge local examinations. Examinations for them are held in Paris and in several of the large provincial towns at certain times during the year. Preparation for the degree of *bachelier ès sciences* is afforded in the mathematical or science section of the Lycées, for that of *bachelier ès lettres* in the classical or literary section.

provided they have performed two years' actual service in the ranks. A few foreigners, though not naturalised, are also by special permission exceptionally admitted.

and soldiers of the army, and of foreigners.

The examinations are conducted much on the same principle as those for admission to the Polytechnic. They are held in the course of the summer both in Paris and in various provincial towns, and are conducted by a body of four permanent examiners, one of whom is a military officer, the others civilians. There is a preliminary or pass examination, and for those who pass this, there is a second or class examination. The preliminary examination is on paper and takes place in all the different towns on the same days, about the beginning of June. The candidates who fail to pass this are not admitted to the second examination, which is entirely *viva voce*. The latter commences for the candidates in Paris at the beginning of July, after which the examiners proceed to the various provincial towns to examine the other candidates. The competition for admission to the school is very great; for the 300 vacancies, which there generally are each year, as many as 1,000 candidates present themselves, but their number is reduced by the written examination to about 500.

Mode of conducting the examination for admission.

Number of candidates.

The subjects of examination are as follows:

Subjects of the examination.

Arithmetic—Vulgar and decimal fractions, weights and measures, square and cube root, proportion.

Algebra—Simple equations, negative quantities, quadratic equations with one unknown quantity, maxima and minima, arithmetical and geometrical progression, logarithms, compound interest, annuities.

Geometry—plane and solid; including the use of simple mathematical instruments, mensuration of areas, surfaces and volumes, and an elementary acquaintance with the properties of the most ordinary curves, such as the ellipse and the parabola.

Descriptive geometry—the mode of representing bodies by projection, and problems connected with geometrical drawing.

Plane trigonometry—positive and negative arcs, trigonometrical functions, formulæ for the addition, multiplication, and bisection of arcs, adaptations of formulæ to logarithmic calculations, construction and use of trigonometrical tables, solution of triangles, practical applications to surveying.

Mechanics—comprising: (*a*) *elementary statics;* composition of two or more forces acting upon a point; composition of parallel forces, conditions of equilibrium; determination of the centre of gravity in the most simple cases; conditions of equilibrium of a body acted upon by two or by three

forces; simple machines, the lever, balance, pulley, wheel and axle, and inclined plane—in all cases leaving friction out of consideration; (*b*) *elementary dynamics*, uniform and variable motion in a straight line, uniformly accelerated velocity, composition of velocities; uniform velocity of rotation round a fixed axis, angular velocity.

Physical science—confined to cosmography; phenomena of the celestial sphere, daily rotation of the earth, the solar system, tides.

Physical and political geography—(in a very general form); distribution of land and sea; the chief chains of mountains, rivers, and lakes in the four continents; main divisions of the world according to language and religion; political divisions into great states—their chief internal divisions, and principal cities—their military, commercial, and industrial importance; colonial possessions.

History—modern European history, from the time of the accession of Louis XIV. to the present day, including an account of the statistics of the great powers, and a comparison of ancient and modern civilisation. The programme is exactly the same as that of the course of study at the Lycées.

Latin—prose composition.

French—composition; an original essay.

Drawing—including geometrical and free-hand drawing.

Modern languages—either German, English, Italian, Spanish, or Arabic; the candidate having his choice between them.

Subjects of the written examination.

The paper-work portion of the examination (which lasts for three days, occupying from five to seven hours daily,) comprises Latin prose, French composition, logarithmic calculations, exercises in geometrical and free-hand drawing, and an essay in the modern language selected. Every candidate has also to produce the various plates of geometrical and other drawings which are executed in the upper classes of the Lycées.

Subjects of the *vivâ voce* examination.

In modern languages there is a *vivâ voce* examination in addition to the written essay. In mathematics the examination is mainly, and in physical science, geography, and history, exclusively *vivâ voce*. Besides this examination in theoretical subjects, all the candidates have to pass a practical examination in fencing, riding, and gymnastics, to show the amount of proficiency they possess in these subjects, and to test what is termed their "physical aptitude" (*aptitude physique*).

Practical examination.

Relative importance of the

The "coefficients of influence," representing the relative value of the respective subjects, are as follows:

I. *Vivâ voce examination.*

various subjects of examination.

Mathematics	Arithmetic	10
	Algebra and trigonometry	10
	Plane and solid geometry	10
	Descriptive geometry	5
	Mechanics	5
Physical Science,	Cosmography	5
Literary subjects	History and literature	10
	Geography	10
	Modern language	6

II. *Examination on paper.*

Latin prose	10
French essay	10
Logarithmic calculations	4
Geometrical drawing	6
Free-hand drawing	6
Modern language (essay)	6

III. *Practical examination.*

Physical aptitude	10
Total	123

Alterations in regard to the examination since 1856.

The modifications made in the subjects of examination since 1856 consist of the exclusion of chemistry and experimental physics (heat, electricity, acoustics, optics, &c.); the introduction of mechanics and Latin; the extension of the subject of modern history, which was formerly confined to that of France, and concluded with the year 1815; and the choice of five modern languages now afforded—German having formerly been the only language which a candidate could take up. The object of the changes appears to have been to give a less technical and more literary character to the subjects, and to base the examination more upon a general than on an exclusively scientific education like that of the Polytechnic. The same object is also apparent in the recognition of the diploma of *bachelier ès lettres* as giving admission to the examination equally with that of *bachelier ès sciences*, and in the advantages offered to candidates who have taken both degrees. Of the 113 "coefficients of influence" allotted to the theoretical examination, those assigned to mathematics and geometrical drawing only now amount to 50.

Engagement to serve seven years taken by

The successful candidates join the school in October. Before admission, those who are not already in the army

those admitted to the school.

are required to engage for a period of seven years' service, and are thus, in case of dismissal from the school for misconduct or idleness, or of failure in obtaining a commission, liable to be sent into the army as non-commissioned officers or privates according to circumstances. The two years of their stay at the school count as part of their service. The foreigners admitted by special authority, not being naturalized French subjects, cannot of course be required to enter into the engagement of military service, and therefore occupy an exceptional position at the school.*

Payment, and admission without payment.

"The ordinary payment is 60*l.* (1,500 francs) per annum. All whose inability to pay this amount is satisfactorily established, may claim, as at the Polytechnic, an allowance of the whole or of half of the expenses from the State, to which may be added an allowance for the whole or for a portion of the outfit, (from 24*l.* to 28*l.*)"† These *bourses* or *demi-bourses* with the *trousseaux* or *demi-trousseaux* are very freely granted; nearly one-half of the cadets at the present time are *boursiers* or *demi-boursiers*. The students at the school, with the exception of those admitted from the army, receive no pay.

Average age of the pupils.

The ordinary age of the young men at the time of entering the school is from 18 to 19, though, of course, the candidates admitted from the army are often very much older, the age for admission in their case being from 20 to 25. This leads to a considerable difference of age among the cadets, the limits ranging from between 17 and 18 to as much as 26 or 27.

Number admitted from the army.

The number who gain admission from the army is about 25 each year out of the 300. They are generally young men who have previously failed in the entrance examination for St. Cyr, and have subsequently entered the army as privates. The wisdom of extending the limits of age for admission in their favour is apparently much questioned; the object of the regulation is to hold out advantages to intelligent non-commissioned officers, but its practical result in general is merely to allow a longer period of preparation to candidates who have failed to gain admission to the school at the ordinary age.‡ It seems also that in former years young men were allowed to enlist in regiments expressly for the purpose of profiting by the extension of age, and were

* At the time St. Cyr was visited, there were only 12 in the school. Several of them, judging from their names, appeared to be Poles. Among the names occurred that of Ong-zoo.

† Report of the Commissioners of 1856.

‡ Scarcely one among the number of candidates admitted from the army is a man who has really been taken for the service by conscription; they come from the same classes as the other candidates.

exempted from nearly all duty by commanding officers in order to have time to prepare for the examination. This abuse led to the present stringent regulation by which two years' *real and effective* service in the ranks is required from all candidates above the ordinary age, but there appears to have been considerable difficulty in enforcing the regulation.

Admissions from La Flèche,

About 15 of the cadets annually admitted come from the junior military school at La Flèche,* but the great majority have been educated at civil schools. Of the latter the Lycées, or public schools, furnish the larger proportion, but a considerable number—including, it is said, generally the ablest pupils—come from the *pensions ecclésiastiques* conducted by the Jesuits, the most famous of which is the school of St. Barbe in Paris. As many as 50 candidates yearly are in general admitted from these establishments. Very few, and these only the sons of quite the higher classes, come from strictly private schools. There does not appear in France to be the demand for the assistance of "crammers" in preparing for examinations, which exists both in England and in Prussia; the examination for admission to St. Cyr is said to be such that the ordinary course at the Lycées is quite sufficient to enable a candidate to pass it.

and from civil schools.

Organization and Establishment.

The pupils formed in two divisions.

The pupils are distributed into two divisions—the first or senior division, and the second or junior division—corresponding to the two years of the course. These divisions are, however, now only kept distinct so far as instruction is concerned.

And organized as a battalion of eight companies.

For all purposes of discipline and interior economy the school is organized as a battalion, consisting of eight companies, each of which contains pupils of both divisions. Formerly the two divisions were kept altogether distinct, each consisting of four companies; but it has been found more conducive to discipline and to the prevention of bullying to intermix the pupils of the two years in the several companies.

Company officers.

Each company is commanded by a lieutenant, and two companies are placed under the charge of a captain. The lieutenant of each company is assisted by an adjutant, who is a non-commissioned officer taken from the army, but selected from those who have been recommended for promotion. He has considerable authority over the pupils in matters of discipline. There is also in each company the

* The pupils of La Flèche formerly had the privilege of being raised 15 places in the examination for St. Cyr—that is to say, that one of them standing 315th on the list would have been admitted, to the exclusion of the candidate who stood 300th. This privilege was abolished on the reorganization of the school of La Flèche in 1859.

same number of non-commissioned officers as in a company of the line, selected from the pupils themselves, to assist in maintaining discipline.

The cavalry cadets form a distinct department.

The cadets intended for the Cavalry, generally about 60 in number, are for all purposes of discipline and interior economy distributed among the companies with the others; but for practical instruction in drill and riding they form a distinct section by themselves, and are placed under the special superintendence of Cavalry officers. From the day of entering the school there is a complete separation between the candidates for Infantry and Cavalry so far as instruction in drill is concerned—much more so than there is at Metz between the students of Artillery and Engineers.

Establishment.

The establishment of the school is as follows :—

A brigadier general as Commandant.
A lieutenant colonel of infantry, Second Commandant, with the duty of the general supervision of all the various departments.

Battalion Staff (Infantry Officers).

1 Major, commanding the battalion.
4 Captains, one to every two companies.
8 Lieutenants, commanding the companies.
} Also instructors in infantry drill.
1 Lieutenant to superintend gymnastics, fencing, &c.

Cavalry Staff.

1 Major, commanding the cavalry section.
2 Captains.
8 Lieutenants.
} Instructors in riding and cavalry drill.

Educational Staff.

1 Director of Studies. (At present a major of Engineers.)
2 Assistant directors. (Captains.)
4 Examiners for admission (1 military, 3 civilians).
2 Professors of artillery (officers of Artillery).
1 Professor of topography and mathematics (an officer of Engineers).
1 Professor of administration, military art and history (an officer of Infantry).
1 Professor of fortification (an officer of Engineers).
1 „ literature (a civilian).
2 „ history and geography (1 military, 1 civilian).

3 Professors of drawing
1 „ German } (Civilians.)
1 „ English
17 Assistant professors (8 military, 9 civilians—of the latter of whom two are for German and one for English.)

In addition to the above there are a *major administratif*, a treasurer, an assistant treasurer, a steward, a librarian, a chaplain, a Protestant minister, three surgeons, a veterinary surgeon (who also gives instruction in veterinary science), and a lieutenant in charge of the cavalry detachment employed in looking after the horses. There are also a considerable number of non-commissioned officers, employed partly to assist in maintaining discipline, partly to give instruction in fencing, gymnastics, artillery practice, &c. Including the cavalry detachment, 170 non-commissioned officers and soldiers in all are employed at the school. The strength of the whole civil and military establishment, including clerks, servants, and other subordinate *employés*, amounts to upwards of 300 individuals.

Separation between the military and educational staff.

The general military staff is kept quite distinct from the educational staff, the latter being under the immediate superintendence of the Director of Studies. The cavalry officers are solely employed in the instruction in riding and cavalry drill (theoretical and practical), and have nothing to do with the interior economy of the companies. This is entirely in the hands of the infantry officers (*personnel du bataillon*) who, in addition to giving instruction in infantry drill, have the special superintendence of the companies, and are more particularly charged with the discipline out of the actual hours of study. During lectures and study, however, the maintenance of order is left in the hands of the educational staff. Every military professor, and, in fact, every officer employed in the establishment has powers of punishment according to his rank; the civilian professors have not the same power, but report offences to the Director of Studies, and during their lectures the maintenance of order is more particularly in the hands of the under-officers among the pupils. One of the civilian professors stated that he never experienced any difficulty in maintaining order. The title of *répétiteur* does not exist, but the duties are performed by the assistant professors.

Powers of the professors in respect to discipline.

Appointment of officers and professors.

The captains and lieutenants of the military staff are appointed on the recommendation of the Inspectors-General of Cavalry and Infantry, generally from old pupils of school. The military professors and assistant professors (except those belonging to the Artillery and Engineers) are appointed by competitive examination, held whenever a vacancy occurs, no

condition of rank being necessary. Those of the Artillery and Engineers are appointed on the recommendation of the *comités consultatifs* of these services. There is no fixed limit to the tenure of any of the appointments, but those of the subordinate officers (captains and lieutenants) are in practice seldom held more than three years, as the general principle is observed that an appointment should be vacated on the promotion of its occupant to a higher rank. All officers employed at the school receive an addition of one-third to their regimental pay, and are in addition paid according to the increased rates applicable to the garrison of Paris. Considerable advantages in the way of promotion are offered to officers employed either on the educational or military staff. Captains after three years', and lieutenants after two years' employment at the school are promoted on a special list, even though there are no vacancies in their regiments. This was one of the changes introduced in 1861, with the object of attracting a superior class of officers to the school. The appointments are said to be considerably sought after, and a large number of candidates always offer themselves for the competition for a vacancy among the professors. The civil professors are appointed by the Minister of War, on the recommendation of the Minister of Public Instruction.

Advantages offered to officers employed at the school.

Superintendence of the instruction.

Council of Instruction.

The immediate superintendence of the studies rests with the Director of Studies, assisted by two captains as assistant directors. One of the latter is on duty every week to exercise a general surveillance over the halls of study. A Council of Instruction, composed of officials of the school, is charged with the general supervision of the course of instruction. It consists of the Commandant as president, the Second Commandant, the commandant of the infantry battalion or the cavalry section, the Director of Studies, one of the assistant directors, and four professors, the latter being changed annually. The Council have no power to make alterations in the studies, except in points of detail; but their duty is to propose any improvements they may think necessary to the Minister. Their influence, however, appears in this matter to be very much less than that of *Conseil de Perfectionnement* at the Polytechnic, whose recommendations, owing to the eminent character of its members, always carry very great weight with them. A Council of Discipline is similarly charged with the consideration of all measures connected with the maintenance of discipline. It is composed of the Commandant, the Second Commandant, one of the field officers, two captains, and two lieutenants, the last four changing each year. The financial business of the school is conducted by a third board called the Council of Administration.

Council of Discipline.

Council of Administration.

The estimate for the expenses of the school for 1869 is as follows:— Annual expenses of the school.

	Francs.
Pay of officers, non-commissioned officers and soldiers attached to the school, professors, civil staff, clerks, servants, &c.	533,792
Instruction, maintenance, purchase of books, clothes, &c. - - -	740,000
Outfit allowance to 75 pupils, on entering the army, at 400 frs. - -	40,000
Maintenance and repair of buildings -	35,000
Total sum charged in the school estimate	1,348,792
Add pay of the general commanding -	15,000
Total expense - -	1,363,792
Deduct payments received from pupils -	622,500
Annual cost to the State -	741,292

or about 29,650*l.* Taking the establishment at 600 pupils, the annual expense of maintaining and instructing each appears to be 2,273 frs., or as nearly as possible 91*l.*, which is not entirely covered even by the contribution from an individual who pays the full charge (24*l.* to 28*l.* original outfit, and 60*l.* each year). Cost of the maintenance of each cadet.

School Buildings and General Routine.

"St. Cyr is a little village about three miles beyond the "town of Versailles, and but a short distance from the "boundary of the park. The buildings occupied by the "school are those formerly used by Madame de Maintenon, "and the school which she superintended. Her garden has "given place for the parade and exercise grounds; the "chapel still remains in use; and her portrait is preserved "in the apartments of the Commandant. The buildings "form several courts or quadrangles; the court of Rivoli, "occupied chiefly by the apartments and bureaux of the "officers of the establishment, and terminated by the "chapel; the courts of Austerlitz and Marengo, more "particularly devoted to the young soldiers themselves; "and that of Wagram, which is incomplete, and opens into "the parade grounds,"* Situation of the school.

Immediately in front of the long range of buildings on the south, and just beyond the wall which surrounds the school

* Report of the Commissioners of 1856.

grounds, is the village of St. Cyr; in rear of the main buildings are the parade ground, the gymnasium, the riding schools (three in number), and the large barracks and stables of the cavalry detachment. The school grounds, in addition, comprise an area of some acres in extent, a large part of which forms the cavalry drill-ground, while the remainder is laid out in pleasure grounds and shrubberies. Outside the walls, beyond which no pupil may pass without permission, lies the polygon for artillery and musketry practice, extending into the open country which slopes away northwards behind the school.

The school buildings.

The three courts of Marengo, Austerlitz, and Wagram contain the school buildings proper. On the ground-floor are two large refectories, the buttery and kitchen, the recreation-room, museum and model-room, the fencing hall, and the amphitheatres or lecture-rooms. The principal lecture-rooms are two in number, one for each division. Each is large enough to contain fully 300 pupils, the mode of instruction being, as generally in France, by lectures to large numbers. The whole of each division—*i.e.*, the 300 pupils of each year—attend lecture together, taking notes of the professor's remarks and subsequently filling up these notes in the halls of study. The only exception to this is in the case of languages, for instruction in which the pupils are divided into smaller classes. About 50 in each year learn English, and as there are two masters, the classes average 25 each. In German there are nearly 50 in each class, which was said by the Director of Studies to be too large a number. There are smaller lecture-rooms for language lessons. On the occasion of visiting the school, an opportunity was afforded, by the courtesy of Major Duparcq, the Director of Studies, of attending a lecture on military administration delivered to the senior division. Upwards of 250 students were present. The amphitheatre is provided only with benches rising in tiers, but with no desks, the students being obliged to write their notes on their knees. Besides the professor, himself an officer, four other officers of the school were present. It does not, however, seem to be necessary here, as at Metz and at the Staff school, that an officer should be present on duty even at the lecture of a civilian professor. The under-officers, who are selected from the senior students, are on duty at all lectures. When the professor is a civilian the under-officer is responsible for order, and has power to inflict punishment for irregularities; in cases of serious misconduct the professor reports the offender to the Director of Studies. The under-officer on duty sits at a small table by himself, near the professor, so placed that he can overlook the whole

Lecture-rooms.

The lectures.

lecture-room. During the lectures to the junior division an under-officer from the senior division is similarly present on duty. It appears that more difficulty is experienced in maintaining order in the lecture-rooms with the students of the second year than with those of the first year.

Messing. The refectories each accommodate four companies. The meals which are taken in them are—breakfast at half-past 6, dinner at a quarter-past 12, and supper at a quarter-past 8; some slight refreshment is also supplied during the afternoon (*gouter*) which, however, is eaten on the parade ground. For breakfast, coffee is given, with bread; at dinner a bottle of wine is allowed among five. The daily messing of each pupil costs about 1 fr. 50 cents. There is no restaurant of any kind for the students; food can only be obtained at the regular hours, and the introduction of liquor or eatables of any description is strictly forbidden.

Recreation room. The recreation room is a large cheerless-looking room, the sole furniture of which apparently consisted of a few billiard-tables. There is only one recreation room for the whole school, to which the companies are admitted by turns on different days.

Amusements. Billiards, dominoes, chess, and dancing, are the main amusements. Singing, which is taught as a voluntary subject, affords also a means of recreation to a certain number. There is no reading room, except the library, to which only a limited number of the pupils are admitted daily, and the introduction of newspapers within the school is strictly forbidden.

Model room. The model room contains a good collection of scientific instruments, with models of steam engines and machinery,* and appears particularly well furnished with electrical apparatus. It also has a collection of specimens of *tentes d'abri* and other articles of field equipment, for the purpose of illustrating the manner in which they are carried on pack animals. A certain number of the students are admitted daily to the model room, and a professor attends to give instruction.

Library. On the first floor are the library and *salles d'étude*. The library is apparently the only place where any private reading can be indulged in; besides scientific and literary books it is supplied with magazines and periodicals. Only 30 pupils are admitted to it each day, a regular hour being fixed for their admission; those under punishment are excluded from it.

Halls of study. The *salles d'étude* are four in number, two for each division, and each accommodating

* In all the French military schools, both at Metz, the Staff School, and St. Cyr, great importance is attached to a knowledge of machinery, and much time is devoted to the drawing of it. The object was stated to be partly to give practice in drawing, partly to afford an acquaintance with the practical working of different kinds of machines, more especially the steam engine.

about 150 pupils. All study and work of every kind is done in these large rooms. After each lecture the pupils are marched to the *salles d'étude*, where, under the surveillance and with the assistance of the professor, they complete the notes taken in the lecture-room. Every pupil has his own fixed place at a desk, which he is not allowed to quit. A number of the student under-officers are on duty in each hall to assist in preserving order. They are distributed through different parts of the room, and sit at separate tables, apart from the others. No officer besides the professor is actually present in the room, but the four *salles* all open out of a central corridor, in which one of the assistant directors of studies, with an adjutant, is constantly on duty; through the glass doors of the halls he maintains a general supervision over the students, and is at hand in case his intervention is required. Each *salle d'étude* is furnished with a number of small libraries containing books bearing on the subjects of instruction. Text-books appear to be very little used.

Hall for drawing.

A fifth large hall is devoted exclusively to landscape and figure drawing, and holds about 150 pupils. For instruction in this subject each division is divided into two sections, which attend on different days. Immediately adjoining the *salles d'étude* are the small *cabinets d'interrogation*, in which the periodical examinations by the professors take place.

Dormitories.

Above the *salles d'étude* are the large dormitories, nine or ten in number, containing about 60 beds each, and furnished almost exactly like ordinary barrack rooms. The pupils are distributed among the dormitories by companies, the seniors and juniors being mixed together. The beds are arranged in a double row, head to head, down the centre of the room, with an interval of about 3 feet between them. Above the beds are open shelves on which the kits are arranged exactly as in a barrack, and the arms are kept in racks round the walls. There is no washing apparatus in the dormitories, and for this purpose all have to descend to a sort of trough in a passage on the ground floor. The pupils make their own beds, and clean their uniform, shoes, and arms, themselves; but they no longer, as formerly, are required to sweep out the dormitories.

Parade ground and drill.

Immediately behind the school buildings is the parade ground, used for the daily afternoon drills. Here, in the course of the afternoon, the infantry cadets were seen at drill. The school had recently reopened after the vacation, and the newly joined cadets were in squads by themselves, being put through recruit drill, for which corporals and serjeants of the senior division were employed as instructors, under the super-

intendence of the company officers. Others were going through the manual and platoon exercise. At one side of the parade ground is a covered shed, where drill is carried on in bad weather. The gymnasium, which is at a short distance from the parade ground, is not covered over. In the large *manége* beyond the parade ground the cavalry of the senior division were at *peloton* (troop) drill, mounted; in their case likewise, cadets themselves were employed as instructors, under superintendence of the officers, and the individuals called out to drill their comrades were required to give all the explanatory instructions. In the riding schools the newly joined cavalry cadets were commencing their instruction in riding, while in the cavalry barrack square a squad was at sword exercise on foot, under charge of an officer. Great importance is attached to the cavalry section of the school. The cavalry barracks, placed apart from the rest of the buildings, contain three large riding schools, stabling for nearly 400 horses, and barrack accommodation for the men employed in looking after them. No less than 13 officers are employed in the cavalry department, who have the exclusive charge of the cavalry cadets in drill and riding.

Cavalry drill.

Importance attached to the cavalry department.

The school year commences about the 20th or 25th of October and terminates about the 15th of August. The intermediate period is vacation. There is also a vacation of four days at Christmas and eight days at Easter. Altogether there are nearly three months' vacation in the year, and as the annual examinations occupy fully three weeks, not much more than eight months of the year are actually devoted to instruction. During this period, however, the work is very severe. There are no half-holidays; Sundays and certain great *fêtes* are the only free days, and the only days on which the pupils are allowed to go outside the school buildings. The daily routine of work varies according to the season. At the time the school was visited, during the winter course, it is as follows:—

Distribution of the school year.

The students rise at 5; from a quarter past 5 to half-past 6 the time is past in the *salles d'étude* in preparation for the lecture of the day. From half-past 6 to a quarter to 8 they are engaged in making their beds, cleaning their clothes and arms, and have breakfast. The morning parade and inspection by the company officers then takes place. At a quarter past 8 they are marched to the amphitheatre for the day's lecture, which lasts till half-past 9. After a quarter of an hour's interval they are marched to the *salles d'étude*, where till 11 they are employed in completing their notes of the preceding lecture, and from 11 to a quarter past 12 in drawing of some sort. At a quarter past 12 they have dinner, and are then allowed a short period of free time if not

Daily routine in winter.

required for fencing or dancing. From a quarter to 2 to a quarter to 4 two hours are spent every day in drill; this is followed by half an hour's recreation, during which the afternoon meal is eaten. From a quarter past 4 to a quarter to 7, two hours and a half are given up either to fencing, gymnastics, or to instruction in the drill book (*théorie*). From 7 to a quarter past 8 there are either language lessons or study of such subjects as the pupils please (*étude libre*) in the *salles d'étude*. At a quarter past 8 there is supper, immediately after which they go to bed. The general principle on which the time is distributed is, that the morning up to a quarter past 12 is devoted to indoor work, the afternoon chiefly to outdoor and practical work, while in the evening there is either theoretical instruction in drill or language lessons. There is never more than one lecture of an hour and a quarter in length in the day, but two hours and a half are spent in the *salles d'étude* either in preparation for or revision of the subject of the lecture, and an hour and a quarter is devoted daily, for the whole of the two years, to drawing.

Modifications in summer.

In the summer the pupils rise at a quarter to 5; the main difference in the distribution of the time, during the summer course, which commences about the 15th of May, is that the drill and other practical exercises are chiefly done in the early morning, from 5 to 7, and in the evening, from half-past 5 to 9, while during the afternoon there is study in the *salles d'étude*. The same general rule, however, prevails of a single daily lecture, of study upon the subject of the lecture in the *salles d'étude*, and of a lesson in drawing of an hour and a quarter.*

Sunday duties.

On Sundays throughout the year there is about an hour's study in the morning. The pupils also attend mass in the school chapel, or a separate service which is given for those who are Protestants. This, with inspections, parade, and a certain amount of drill, occupies the day till 11. At 11 dinner takes place, after which the pupils not under punishment are, within certain limits, allowed to leave the school till half-past 8. They generally appear on these occasions to go to Paris. Sunday is also the only day on which they are allowed to receive visits from their friends, and then only with the permission of the Commandant, and in a room specially set apart for the purpose (*salle des visites*) at the entrance of one of the quadrangles. To this room, which is decorated with portraits of distinguished pupils of the school, the visitor is introduced, and here the pupil is brought to see him. No one is allowed to introduce a visitor into any other part of the school buildings.

* Tables of the daily distribution of time, both in summer and winter, are given in the Appendix, page 488.

Discipline.

The young men are subject to military law exactly like soldiers in the army; everything is conducted as nearly as possible as it would be in a regiment, and even a guard of the cadets is mounted each day, from which sentries are furnished at the school gate and other posts. For general purposes of discipline and surveillance of the cadets, the lieutenant who commands each company is assisted by an adjutant. The adjutants are non-commissioned officers taken from the army, but are always selected from those who have been recommended for promotion to commissions. They appear to have much to do with the maintenance of discipline, and have even the power of inflicting punishment. Although, however, the management of the cadets is more especially entrusted to the company officers, every officer of the establishment is bound to take notice of, and has power to punish, any irregularity which comes under his notice; and during the hours of lecture and study, the discipline is directly under the control of the officers of the educational department. In the same way all the non-commissioned officers of the army employed as instructors in fencing, gymnastics, &c., have power of punishing the cadets for inattention or misconduct while under their instruction. The latter are required to salute these non-commissioned officers, as well as the civilian professors.

Military law, and a regimental system enforced.

Maintenance of discipline.

To assist in maintaining discipline each company has its complement of non-commissioned officers appointed from the cadets themselves, exactly as a company of a battalion of the line, viz.:—

Cadet non-commissioned officers.

1 Serjeant-major.
1 Quartermaster serjeant (*serjent-fourrier*).
4 Serjeants.
8 Corporals.

These under-officers are selected exclusively from the pupils of the senior division or second year. In appointing them character and personal qualifications do not seem to be much considered. They are taken from those who have been within the first half in the examination list at the end of the first year at the school, and in practice it appears that they are always appointed in the order in which they stand on the list. They are liable to lose their rank not only for misconduct, but also if they do not retain their place among the first half on the list in the classification of the pupils which is made at Easter. As regards all details of the interior economy of their companies, they perform duties very analogous to those of non-commissioned officers in a regiment—drawing the rations, calling the rolls, furnishing to the officers daily states

Their duties.

and reports of their companies, parading and marching the privates to their lectures, meals, drills, &c., and being responsible for the communication of all orders to their respective companies. In each company there are an orderly serjeant and corporal of the week on duty, and in each demi-battalion (consisting of four companies, and corresponding to a "wing" in our service), there is an orderly serjeant-major of the week. Like the adjutants, the cadet non-commissioned officers have powers of punishment varying according to their rank. They are responsible for the maintenance of order in the dormitories, and at other times when an officer is not present; and during lectures and studies a certain number of them are on duty to assist the professors, and to note for punishment any whom they see inattentive or misbehaving. A civilian professor cannot inflict punishment, but in case of misconduct too serious to be punished by the under-officer on duty, he sends the offender out of the room under charge of the latter, who places him in arrest. The professor at the close of the lecture reports the case to the director or assistant-director of studies, who inflicts the punishment he thinks necessary.

Other distinctions among the cadets.

In addition to the distinction made among the cadets between non-commissioned officers and privates, the latter are also, as in the army, divided into those of the first and those of the second class. The former wear a distinguishing badge, and like the non-commissioned officers enjoy increased privileges in regard to leave. Admission to the first class seems more dependent on industry than on conduct, the condition being, as in the case of promotion to the rank of non-commissioned officer, that a cadet must be within the first half of the list in the periodical classifications founded upon the examinations at the school.

Punishments.

The punishments in force at the school consist of:—

Deprivation of leave.

Punishment drill for three-quarters of an hour daily, during the recreation hours.

Close arrest in confinement (*salle de police*); those punished in this way, however, have to attend lectures and drills.

Reprimand in daily orders.

Loss of the privileges of the first class.

Suspension or reduction to the ranks, in the case of a non-commissioned officer.

Imprisonment either in the school prison or in the military prison at Paris.

Expulsion.

Punishment is entailed according to the regulations of the school by "all disobedience of orders, murmurs, disrespectful

" conduct, infraction of the regulations, misconduct either " within or without the school, quarrels amongst the pupils, " inattention to duty or drill, arrears of work, lateness in " returning from leave, untidiness in dress, in short by " everything calculated to interfere with order, subordination, " or study."

The extent of punishment which can be inflicted by the various authorities is as follows:— Powers of the various authorities in regard to infliction of punishment.

By the corporals	Cadet non-commissioned officers.	2 days' punishment drill.			
„ serjeants		4 „ „			
„ serjeant-majors		6 „ „			
„ adjutants	Army non-commissioned officers.	8	„	„	and 2 days' close arrest.
„ lieutenants and captains.		15	„	„	and 8 „
„ field officers		30	„	„	and 15 „
„ second commandant.		30	„	„	and 20 „
„ commandant		30	„	„	and 30 „

The power of inflicting public reprimands, the forfeiture of the privileges of the first class, the suspension or reduction of a non-commissioned officer, and imprisonment (a punishment which is said to be very rarely inflicted), is exclusively confined to the Commandant; even he has not the power of dismissing a pupil; this rests solely with the Minister of War, and the punishment can only be inflicted on the recommendation of the Council of Discipline, before which a pupil guilty of serious misconduct is brought.* The Council inquires into the case, hears the officer commanding the company on the character and antecedents of the pupil, and decides upon the course to be recommended to the Minister. The recommendation of the Council is invariably carried into effect. A pupil who is dismissed is sent into the army either as a non-commissioned officer or private, according to the circumstances of his case. In cases of violence to a superior officer an offender can be tried by a court-martial. Dismissal rests with the Minister of War.

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* The offences for which a pupil is liable to be brought before the Council of Discipline are:—

1. Violence towards a superior.
2. Threatening language, refusal to obey an order, or improper replies to a superior.
3. Drunkenness.
4. Violence towards a comrade.
5. Absence without leave.
6. Misconduct when on leave of such a character as to bring discredit on the uniform of the school.
7. Bullying or annoyance of the pupils of the junior division.
8. Stirring up or participating in any disorder within the school.

Conduct marks.

A register of all punishments inflicted is kept, and marks, which affect the final classification of the pupils, are given for good conduct—or rather, to speak more correctly, marks are lost for bad conduct. The allotment of these marks is made by a board, consisting of the Commandant, the Second Commandant, and the officer commanding either the battalion or the cavalry section. The system adopted is to deduct a certain number of marks for every punishment a cadet may have undergone, and, in order to estimate the number of marks to be deducted in each case, all punishments which have been inflicted are converted into a certain number of days of punishment drill. Thus:

Each day of close arrest or school prison } is equivalent to four days' punishment drill.

Each day of military prison { is equivalent to eight days' punishment drill.

A pupil who has been subjected to no punishment is awarded 20 marks; one mark is deducted for every 10 days' punishment drill, so that 200 days' drill count 0 in conduct marks. Any one whose punishments amount to 200 days' drill is, as a matter of course, brought before the Council of Discipline, who can, if they think fit, recommend his dismissal to the Minister of War.

Leave of absence is made a reward of good conduct and industry.

The pupils are only allowed to go beyond the school grounds on Sundays and certain other *fête* days, and even on these days leave is not universally granted to all. It is regarded as a privilege, which is the reward both of good conduct and of diligence. Those who are under punishment, or whose marks for the school work do not come up to a certain fixed standard, are not allowed leave at all. It is also forfeited for two months after coming out of hospital for venereal disease. Provided a pupil's conduct is good, the number of times during which he can obtain leave in the month depends on the marks he has obtained in his studies. A graduated scale of privileges is adopted; a certain minimum number of marks must have been obtained in order to acquire the right to leave at all; those who come up to this standard are allowed leave once a month; those who reach the highest standard have the privilege every Sunday. The conditions of obtaining leave are made more easy for the cadets of the second year, for those who belong to the first class, and for the under-officers; they can obtain the privilege more frequently with a lower number of marks. Those who do not go on leave on Sunday are marched out in the afternoon (*promenade militaire*) under charge of an adjutant. At the hour fixed for returning to the school all who have been on leave are paraded and

carefully inspected by an officer. Drunkenness, on coming back from leave, is said to be a very rare offence.

Strictness of minor regulations.

In regard to minor details of conduct within the school the rules are extremely strict. No liquors or eatables of any sort are allowed except at the regular meal times. Smoking is only permitted in the courts, not within any of the buildings. Absolute silence is enforced in the dormitories, which are visited periodically during the night by an adjutant and occasionally also by an officer. The pupils are restricted from entering any rooms or halls of study other than those specially assigned to their own companies, and are forbidden to talk in a loud voice within the buildings even during the hours of recreation.

The presence of foreigners is not prejudicial to discipline.

The foreigners admitted to the school, not being under an engagement to serve in the army, are not subject to military law like the other pupils. Their number, however, is so small, that their exceptional position is not found to exercise any prejudicial effect upon the discipline of the school, and upon the first act of serious misconduct they are invariably dismissed.

Nor that of older cadets admitted from the army.

It might be thought that difficulties in regard to discipline would be created by the admission of the candidates from the army, who are received up to the age of 25, and are generally from two to five years older than the ordinary pupils. Indeed one of the arguments urged by those who are opposed to the admission of such candidates is the difficulty of subjecting men of so advanced an age to the same restrictions as their younger comrades. No such difficulty, however, is said by the authorities of the school to occur in practice; in the first place, the number of these older cadets is very limited; and in the next, the military discipline to which they have already been accustomed in the ranks renders them quite as amenable as the others to the regulations of the school. No relaxation of the rules is made in their favour; they are subject to the ordinary restrictions as to leave and all matters of conduct. There appears, however, generally to be rather more difficulty in the management of the second years' pupils than of those of the first year; and at all times in the history of the school there seems to have been a disposition on the part of the seniors to bully the juniors, and to establish a sort of illegal system of fagging; duels even have occasionally arisen from this cause; they are now strictly forbidden, but are said sometimes still to take place when the pupils leave the school before entering the army.

Little moral control exercised.

Apart from mere purposes of discipline there does not seem to be much moral control exercised over the pupils. The officers of the establishment, though off duty they treat the young men in a friendly manner, do not mix with them on

terms of intimacy, and see comparatively little of them. It is the adjutants (who, it must be remembered, are only non-commissioned officers) that are brought most in contact with them in the routine of daily life. Opportunities for religious advice are, however, afforded, as the chaplain attends twice a-week for this purpose. With regard to conduct outside the school, on the few occasions when leave is granted, there is little attempt at control, so long as nothing is done which would create a public scandal. The young men are scarcely ever seen in the village of St. Cyr itself, as they almost invariably spend their leave in Paris; but wherever they may be they are required to appear in uniform, and are liable to be taken up as prisoners, like common soldiers, by the military authorities of any place in which they are, in case of improper conduct in public.

Strict military character of the discipline.

The account which has just been given of the regulations of the school, and the previous description of the routine of daily life, will show to what a strict discipline the pupils are subject. They are, in fact, treated almost entirely like private soldiers, just as they are liable to be made to serve in this rank in the army in the event of dismissal from the school. They mount guard, and perform ordinary sentry's duty at the school-gate. They are marched to and from every lecture, study, or parade, under the charge of orderly non-commissioned officers. They perform what we should be inclined to look upon, for young men of their age, who will shortly be commissioned officers, as menial duties. Their uniform is little better than that of the private of an infantry regiment; their dormitories are certainly not superior to ordinary barrack-rooms in England. They are subject to most rigid restrictions in regard to their personal liberty—never being allowed to go beyond the school walls except on Sunday, and having great limitations placed even upon receiving visits from their friends. Their food is of the plainest description, and beyond the regular daily allowance nothing further in the way of drink or eatables can be obtained. They are forbidden even to read newspapers, and there is almost an entire absence of anything in the way of recreation. In fact, the entire day is so constantly occupied that they have little time, even if they had the opportunities, for amusement. The whole time nominally allowed for recreation during the day, from five in the morning to nine at night, scarcely exceeds an hour-and a-half; and this brief period is so much cut up into short intervals of a quarter-of-an-hour between various occupations, that they can scarcely be said to have any part of the day really free for amusement except on Sunday. There is no privacy in the domestic arrangements, and neither leisure nor means

are afforded for private study. Their life is altogether that of the barrack. There is a complete absence of luxury, and even of ordinary comfort, according to English ideas, in the arrangements of the school. "We lead," said the Director of Studies, "somewhat of a monastic existence here."

Course of Instruction.

The subjects of instruction are divided into two courses corresponding to the two years of residence. As a rule the studies of the first year are more general, those of the second year more professional in character; with the exception of topographical and geometrical drawing, and military geography, there is little technical instruction in the first year's course. The work during it is chiefly in the hands of the civil professors, and consists to a considerable extent in a general revision of the subjects already studied at civil schools, while at the same time giving to these subjects a military direction. The second year embraces the practical application to professional purposes of the studies pursued during the first year. The first year, in the words of an account of the school, is mainly devoted to "completing the general education of the man" (*à achever l'homme*), the second, to "forming the officer" (*à faire l'officier*). Drill, however, and most of the practical exercises are carried on uninterruptedly during both years, though more time is devoted to them in the second year. The devotion of so much time to subjects of general instruction appeared to be regarded as a matter of regret by the Director of Studies, who considered that it would be desirable to employ both years in purely military studies; but the present arrangement is necessitated by the comparative deficiency in general education shown by the majority of the pupils from civil schools at the time of their admission. Much greater importance is attached to literary instruction at St. Cyr than at the Polytechnic; on the other hand, mathematics are scarcely taught at all at the school. A knowledge of them, as has been seen, is required for admission; and a brief general revision of the most practically useful portions—such as the use of logarithms, simple problems in mensuration, heights and distances, &c.—is included in the first year's course. But beyond this no mathematical studies are obligatory on the students, and there seems an inclination in some quarters to abandon even this small amount. There is, however, a short voluntary course of mathematics in the second year, for those who wish to obtain admission to the Staff School.

Difference in the character of the instruction in the first and second year.

Little importance attached to mathematics.

First year's studies.

The first year's course of study comprises the following subjects:

Descriptive geometry	25	lectures during the year.
Physics and chemistry	40	„ „ „
Military geography and statistics	31	„ „ „
General literature	32	„ „ „
Modern history	42	„ „ „
German or English	2	lessons weekly.
Theory of drill and military regulations	5	days a week.
Drawing of various kinds		daily.

The pupils have their choice of studying either English or German, one of the two being obligatory. Each lecture and drawing lesson is an hour and a quarter in length.

Descriptive geometry.

The course of *descriptive geometry** comprises the theory of geometrical drawing, projection and perspective, with the construction of scales, maps, and plans. It also includes, under the head of "Numerical Applications," ten lectures devoted to a short practical course of mathematics, viz., arithmetic, algebra, practical geometrical problems, and trigonometry (solution of triangles, and heights and distances). These subjects are treated almost exclusively with reference to their practical applications to fortification and surveying.

Physical science.

The course of *physical science* commences with several lectures on mechanics and machinery, with descriptions of drawbridges, hydraulic presses, pumps, Artesian wells, canals, steam-engines, locomotives, &c.; and then after a brief outline of physical laws and the general properties of bodies, goes into the special subjects of heat, meteorology, electricity, magnetism, acoustics, and optics. Practical instruction in the working of the telegraph is given in connexion with the lectures on electricity.

Chemistry.

The course of *chemistry* includes both the metals and the metalloids (with special reference to their military applications), and a brief account of organic chemistry. The instruction in chemistry is entirely theoretical, no practical manipulations being executed by the pupils. The theory of photography is taught, and its application to military reconnaissance and sketching is illustrated, but the pupils are not employed as operators.

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* Programmes of the courses in the various subjects will be found in the Appendix, page 492.

The course of *military geography and statistics* commences with a general description of the physical geography of Europe, after which nearly half the course is devoted to France and Algeria, the remainder chiefly to the other most important countries of Europe—Germany, Italy, Spain, Russia, Turkey, and Great Britain. The subject is treated on the system of Lavallée, himself formerly a professor at the school; geography is studied chiefly in its military bearings, at the same time the account of each country is not merely confined to a description of its physical features, but includes also its political institutions, statistics, &c. Military geography, &c.

The course of *literature* gives an account of the great literary celebrities—prose authors, poets, dramatists, philosophers and orators, of modern Europe, chiefly since the time of Louis XIV. Two lectures are added at the end of the course on the special subject of *military* literature. These are devoted to instruction in the proper style to be adopted in military correspondence, proclamations, general and regimental orders, reports made by an inferior to a superior officer, and on the method and arrangement to be followed in the preparation of reconnaissance reports. This instruction is similar to that given in the Prussian military schools under the name of "military style." Literature.

The course of *history* includes a general review of the most important facts in the history of France previous to the time of Louis XIV, and general European history since that date to the present time. History.

The course of *drawing*, includes figure and landscape drawing (twice a week); geometrical, perspective, and machinery drawing (twice a week); geographical maps and topographical drawing (twice a week). The topographical drawing during the first year consists of practice in conventional signs and *hachures*, in drawing sections of country, and in copying plans and military sketches; it is confined exclusively to indoor work, the students of the Junior Division having no instruction in drawing on the ground. Drawing.

The subjects of instruction in the second year are all strictly professional; they consist of: Second year's studies.

Topography - -	15	lectures	during	the year.
Fortification - -	27	„	„	„
Artillery - -	12	„	„	„
Military art and history	32	„	„	„
Military legislation and administration -	22	„	„	„
Military hygiene -	5	„	„	„

German or English -	2 lessons weekly.
Theory of drill and military regulations -	5 days a week.
Drawing - -	daily.

A choice is allowed between German and English as in the first year; a pupil may also if he pleases take up both languages in the final examination and obtain credit for the marks gained in each. In addition to the above subjects, there is in this year a course of mathematics, attendance at which is voluntary, intended for those who wish to obtain admission to the Staff School. During both years there are occasional lectures in the evening on veterinary science, attendance at which is obligatory for the cavalry cadets, but voluntary for those of the infantry. Dancing and singing are also taught in both years; the former is obligatory, but little time is devoted to it; the singing lessons are voluntary.

Topography. The course of *topography* is, as in all French schools, divided into two parts—regular topography (*topographie régulière*) or surveying, and irregular topography (*topographie irrégulière*) or rapid field sketching. The lectures comprise instruction in the construction of scales, the mode of representing different formations of ground, the copying and reduction of plans; the theory and use of instruments for measuring angles and bases and for levelling; the mode of executing regular surveys, rapid sketches, and reconnaissances of positions and roads, with their accompanying reports.

Fortification. Of the 27 lectures in *fortification*, 13 are devoted to field fortification and its applications to *têtes de pont* and the attack and defence of positions, villages, houses, &c.; one lecture is given in castrametation and camp duties; only five are occupied with permanent fortification, in which the bastioned system is almost exclusively studied, a front of Cormontaigne's being taken as the model; eight lectures have reference to the attack and defence of places, the mode of conducting sieges, the construction of siege-works, &c. The out-door work in connexion with the course will be described when speaking of the practical exercises.

Artillery. In the course of *artillery* four lectures are devoted to the history and construction of small arms; seven to artillery, including an account of the various kinds of ordnance, their projectiles, artillery *matériel*, gun-carriages, limbers, &c., powder and munitions of war, the service of guns, the different kinds of fire, the employment of artillery in sieges and in the field; the last lecture refers to military bridges. The lectures are almost exclusively confined to instruction bear-

ing upon the practical employment of artillery in war, the scientific theory of the subject being treated only in the most cursory manner.

To *military art and history* more time is devoted than to any other subject. The course, after one lecture occupied in a preliminary account of the organization of armies and military institutions, is divided into two parts. The first, of 17 lectures, is devoted to military history; it commences with a brief notice of military institutions and the mode of conducting war in ancient times and in the middle ages; a more detailed account is given of the eras of Gustavus Adolphus, Condé, Turenne, Marshal Saxe, and Frederick the Great; but the greater portion of the course is occupied with the period from 1789 to 1815. The characteristic features of military operations and of the organization of the various arms at important epochs are explained, and in later times several of the most memorable campaigns of the French armies are treated at length—such for instance as the campaigns of 1796, 1797, and 1800 in Italy; the campaigns of Austerlitz, Jena, and Friedland; the campaigns of 1809 in Germany, and of 1814 in France—concluding with an account of some of the most important operations in Algeria. The second part of the course, of 14 lectures, is devoted to military art and tactics, and includes an account of the mode of employing the three arms separately and in combination; the organization and staff of an army in the field; marches, orders of battle, duties on active service connected with cantonments, encamping, bivouacs, and outposts; minor operations, such as reconnaissances, surprises, foraging parties, convoys, detachments, &c. Military art and history.

Of the 22 lectures on *military legislation and administration* nine are devoted to legislation, which is a comprehensive subject, and comprises, in addition to what would be termed in England the Mutiny Act and Articles of War, all laws connected with the recruiting of the army, conscription, promotion, pensions, and honorary distinctions, as well as some account of civil law in its bearings upon military men. In administration five lectures are occupied with the regulations connected with the general administration of the army; military finance; the supply of rations, fuel, forage, clothing, arms, and other equipments; the barrack and hospital service; marching allowances, billets, and transport of baggage, &c. The remaining eight lectures are devoted to a very detailed account of all regulations connected with the pay and interior economy of a regiment; and in connexion with this the pupils are practised in keeping company accounts and in pre- Military legislation and administration.

paring the various returns and certificates relating to pay, clothing, accoutrements, rations, &c., which are required from company officers.

Military hygiene.

The course of five lectures on *military hygiene* describes the principal diseases to which soldiers are particularly liable, both in quarters and on active service, and the most important sanitary precautions to be adopted in regard to clothing, food (with the means of detecting its adulterations), the construction and ventilation of barracks, the choice of situations for camps, &c.

Drawing.

The course of *drawing* consists of landscape and figure drawing (only one day a week in this year); fortification and artillery plates (three days a week); and topographical drawing (twice a week). The amount of fortification drawing done is very great, no less than 21 different plates being executed during the year; at the same time a large proportion of them consist of hand-sketches not drawn to scale. Almost all refer solely to field fortification, the trace of a front on Cormontaigne's system and a plan of a siege being the only drawings connected with permanent fortification. In artillery a few drawings of guns and military bridges are executed. The topographical drawing this year consists of copies in pencil and ink, with sections of the ground copied, reduction of plans to smaller scales, and, during the summer months, surveying and sketching out of doors. Military drawing appears to be learnt entirely by copying plans, drawing from models of ground not being practised.

Voluntary mathematics.

The voluntary course of *mathematics* for the candidates for the Staff School consists of *algebra*—proportion, arithmetical and geometrical progression, simple and quadratic equations, negative and fractional exponents, theory of roots, logarithms, and exponential equations; *geometry*—the calculation of surfaces and volumes of polyhedra, cylinders, cones and spheres; *plane trigonometry*, and the fundamental formulæ of *spherical trigonometry* required for the solution of spherical triangles

Drill, riding, &c.

During the whole of the two years' course a considerable portion of each day is devoted to drill, and either fencing or gymnastics. The actual distribution of the time varies according to the season, but in the winter nearly three hours and a half every afternoon are employed in these exercises, besides which on five days in the week there is an hour and a quarter's theoretical instruction in the drill-books and regulations (*théorie*) of the respective arms. The cavalry cadets are drilled entirely apart during both years, and they now receive no instruction either in the theory or practice of infantry

drill; the infantry cadets are taught to ride, but they do not learn the actual movements of cavalry. Each individual is instructed only in the manœuvres of his own arm. Two hours a day during both years are entirely given up to drill on the parade ground; the cadets are drilled exactly like private soldiers, going through the various stages of squad, *peloton*, and battalion (or squadron) drill. The cadets of the senior division are also constantly employed under the direction of the officers in drilling the juniors, and great attention is paid to teaching them the posts and duties of officers and the proper mode of giving words of command. At the periodical inspections of the school individual cadets are called out to take command of the battalion. The cavalry cadets have the advantage of being occasionally drilled as a regiment with some squadrons of a cavalry regiment from Versailles; but the whole school is seldom exercised in company with other troops, except when their presence is required at grand reviews in Paris; on such occasions the cavalry cadets attend as a mounted squadron and march up to Paris, the infantry are conveyed by train. The field movements of artillery are not taught practically, but instruction is given in the theory of artillery drill, and the cadets are exercised practically in the service of both field and heavy guns. Besides cavalry drill, both mounted and on foot, which takes place every day, the cavalry cadets attend riding school three days a week during the first year, and every day during the second year. The infantry cadets have riding-school only in the second year, about two days a week.

Fencing and gymnastics are compulsory; there are lessons in one or the other nearly every day during both years.

Swimming is not a part of the regular course, and is not obligatory; but instruction in it is occasionally given in the summer to those who desire it.

Practical instruction.

It is during the second year that the practical work beyond drill, gymnastics, and fencing is chiefly carried out. The practical courses during this year, which commence about Easter and extend through the summer months, consist of musketry and artillery practice, surveying and field-sketching, and practical instruction in field fortification and field engineering. Landscape drawing from nature is also taught to those who show a talent for it.

Military sketching.

In military drawing, after practice in contouring and levelling, a regular survey of the country within 1,000 metres radius round the school, and a rapid field sketch and road reconnaissance are executed. Every sketch has to be done within a limited time. Four attendances only of four hours each are allowed for the out-door work of the survey; the road

reconnaissance has to be done in a single attendance of four hours. The sketches are afterwards completed, and the accompanying reports written, in the *salles d'étude*. All field sketching is at first done on foot, but after the conclusion of the regular course the cavalry cadets are all required to make a reconnaissance of a road, mounted. Those of the infantry who are the best draughtsmen, and are at the same time good riders, also execute a similar mounted reconnaissance.

Field works, &c.

In fortification and field-engineering the pupils are taught on the ground the mode of tracing, profiling, and defilading a field-work; the construction in detail of a portion of a work; sapping and siege works; the manufacture of gabions and fascines; the construction of revetments; laying platforms; the system of tracing and laying out a camp for a battalion of infantry; and the construction of field ovens. All the various operations are performed by the cadets themselves.

Bridging not taught.

Bridging is not taught practically, owing to the want of water, but theoretical instruction in it is to a slight extent given in the artillery course, and drawings of bridges are executed. Mining operations are likewise not actually performed by the pupils, although they see them carried out by the Engineers.

Artillery exercises.

The practical course of artillery includes the working of field-guns (14 exercises of two hours each), of siege guns (6 exercises), the construction and repair of siege batteries, and the manufacture of various kinds of artillery ammunition. The manufacture of small arm ammunition was also previously taught, but since the introduction of the Chassepot rifle with its more intricate cartridge this has been given up. All the cadets are also instructed in artillery practice with guns of various sorts, and go through a course of musketry practice.

Time devoted to practical work.

The following table shows the practical work taught during the two years:—

Drill	2 hours daily, both years.	
Fencing or gymnastics	Daily both years.	
Riding.	1st year—for the cavalry only, 3 days a week.	
	2nd year—daily for the cavalry, 2 days a week for the infantry.	
Surveying and field-sketching.		Only during the 2nd year.
Construction of field-works, &c.		
Laying out camps.		
Field gun drill, 14 attendances.		
Heavy gun drill, 6 attendances.		
Artillery and musketry practice, 16 drills on an average.		
Manufacture of ammunition.		

Marks are given for all practical work including drill, riding, fencing, and gymnastics. Those for these latter subjects are awarded by the officers specially charged with the instruction in them. The marks assigned to drill are divided into two classes, given respectively for theoretical knowledge, and for military aptitude, which includes all that we should understand by the term "smartness." In the examination at the end of the first year, the marks for drill, fencing, and gymnastics have a value of about one-seventh of the total number of marks; in the final examination their value is as much as one-fifth of the total.

Marks given for practical work.

General Remarks on the Course of Instruction.

The instruction in all subjects, except languages, is, as at the Polytechnic, given by large lectures followed by study in the *salles d'étude*, with occasional examinations by the professors. All the actual study beyond merely listening to lectures is done in the *salles d'étude*. The time spent in them is almost invariably assigned to some particular subject; this and this alone can be studied during the period set apart for it. A certain fixed time, and neither more nor less, is devoted to each drawing or exercise. It is only occasionally that the pupils are allowed to choose their own subjects of study (*étude libre*) with which to occupy their time in the *salles*; though apparently more latitude in this respect is allowed to the senior division towards the close of the second year, during the two months preceding the final examination. Private study out of the *salles d'étude* is forbidden. In languages alone the system of small classes is adopted. It appears that though a very much larger number of the pupils study German than English (the proportion being about 250 to 50 in each division), English is as a rule better spoken. Very few apparently learn to speak German well. The reason of the difference is said to be, that those who select English are generally the sons of the more aristocratic classes, who have had the advantage of learning the language as children. In order to encourage the study of languages, any one is allowed to take up both English and German to count for marks; this appears to be the only instance in which any subject which is not obligatory on all is allowed to influence the examination. Only a very small proportion, not exceeding 8 or 10 in each division, take up the two languages.

Method of instruction by lecture.

Except in the case of languages.

The small amount of time given to mathematics—the strict limitation of the subject, so far as it is taught, to practical

Mathematics are scarcely at all taught.

Great importance is attached to drill,

problems bearing directly on fortification and surveying—and the great importance, on the other hand, attached to drill and other practical exercises are worthy of remark. The establishment, in fact, seems almost like a large depôt for the training of recruits with an educational department attached to it. The result is that the young men on joining their regiments (both cavalry and infantry) are at once fit for duty. Besides this, the instruction they receive during the course of administration in military regulations, company accounts, military law, &c., enables them not only in drill, but in matters of interior economy, to perform the ordinary duties of company officers.

And to instruction in military regulations.

Much time is devoted to unprofessional subjects in the first year.

The dissatisfaction expressed by the Director of Studies at the necessity for devoting so large a part of the first year's studies to the completion of general education has been already noticed. Even with the necessity which confessedly exists for this, it seems to be thought that the courses in physics and chemistry and in literature are needlessly long, and might with advantage be shortened. Great as is the amount of time spent upon drawing (no less than an hour and a quarter daily during both years), the actual quantity of drawing done, particularly in fortification plates, seems of late to have been diminished.

Text books not employed.

Text-books are scarcely at all used, in fact, except in languages the pupils are expressly forbidden to have any books beyond those provided in the small libraries with which the *salles d'étude* are supplied. Every professor is required to write a general summary of the heads of his lectures, which is lithographed and given to the pupils to assist them in their notes. Marks are not (as at the Polytechnic) given for the notes taken at lectures, but the pupils are required to produce their note-books at the periodical *interrogations*. In many of the subjects written compositions are occasionally required from the students; this is the case in military geography, history, and literature during the first year, and in fortification, military art and history, and administration during the second year; the written exercises in administration consist chiefly of the preparation of returns and company accounts. Besides this, every survey or military sketch done on the ground is accompanied by a report, giving topographical, statistical, military, and historical information of the district surveyed. These reports have to be written exactly in the style and form which would be required from an officer on service. To all the written compositions and drawings marks are awarded, which are placed to the pupils' credit in the yearly examinations.

Written exercises.

Examinations.

Periodical *vivâ voce* examinations (*interrogations*) take place on an average after every two or three lectures in each subject. They are conducted by the professors and assistant professors. No notice is given to the pupils of the time at which they will be called up for examination. They are summoned in divisions of about 8 or 10 to the *cabinets d'interrogation* the precaution of examining a number together, instead of taking them singly (as at the Polytechnic), being adopted to avoid any chance of partiality on the part of the professors in estimating the value of the answers. The *interrogations* are entirely *vivâ voce;* the general value of the pupil's answers on each occasion is estimated according to the usual scale by marks from 0 up to 20.

Periodical *interrogations* after every two or three lectures.

In addition to these ordinary examinations, more general examinations (*interrogations générales de révision*) take place at times in certain fixed parts of the courses of instruction. For these a notice of eight days is given, and the special subjects of examination are notified. These more general examinations have double the value of the ordinary *interrogations.* The marks gained at all the *interrogations,* like those for drawing and written compositions, affect the final classification to a greater or less extent. At Easter in each year a classification of the pupils of each division is made in order of merit as represented by the marks gained up to this period; no specific examination, however, takes place at this time.

General *interrogations* at longer intervals.

At the end of each year's course there is a general examination of the pupils of the two divisions, which commences about the middle of July. The lectures terminate three weeks before the examination, the intermediate time being given up to preparation; indeed in the second year the majority of the lectures are concluded nearly two months before the commencement of the examination. Formerly only the final examination of the Senior division was conducted by independent examiners, that of the Junior division being left entirely in the hands of the authorities of the school. Both examinations are now, however, superintended by officers appointed by the Minister of War, though in the first year's examination the professors and officers of the school are still allowed a voice. The subjects of each year's examination are divided into three branches, the first consisting of scientific subjects, the second of literary subjects, the third of the theory of drill and military regulations. For each branch

Annual examinations.

Conducted by

three juries of independent examiners.

there is a jury of examiners presided over by a field officer. The respective juries are assisted during the examination by the professor of the course in the literary and scientific subjects, and by the captain of the candidates' company in the military subjects. In the first year's examination the officers of the school take part in the deliberations of the jury, but in the second year they have no voice in estimating the merit of the candidates, which is determined solely by the examiners appointed by the Minister.

The examinations are entirely *vivâ voce*, and last about three weeks. Every pupil is examined on three separate occasions, with about a week's interval between each, in the respective branches of examination before the several juries; on each occasion he is under examination for about half an hour. There is not in either year any practical examination in drill before the examiners; the examination is confined to the theory of it. The *practical* proficiency of a pupil in drill and other military exercises is estimated solely by the marks awarded during the school course by the instructors. It is the same also with drawing of all kinds, which does not enter into the annual examinations.

First year's examination.

The examination of the Junior Division (*examen de passage*) determines the order of promotion to the Senior Division; it bears upon all the subjects studied during the year. In the classification which is founded upon it the marks given for the *interrogations* and for the drawings, written compositions, and all other work done during the year (with the exception of notes of lectures), for conduct, and for drill, riding, fencing, and all practical work, are taken into account. In this year the value of the marks assigned to the examination is the same as that assigned to the year's work. Half the mean of the marks gained in each subject during the year is added to half of those obtained in the examination. In drawing, drill, and the practical work in which there is no examination before the juries, the whole of the marks obtained during the year are credited to each pupil. The total number of marks gained in each subject is multiplied by the "coefficient of importance" of that subject, and the candidates are arranged in order of merit as represented by the products, the list being made out by a board consisting of the superior officers of the school and the three examining juries.

Relative importance of the subjects of examination.

The "coefficients of importance," showing the relative influence of the various subjects on the classification of the Junior Division at the end of the first year, are as follows:—

Descriptive geometry	Theoretical course	4
	Drawings	2
Physics and Chemistry		9
Geography and military statistics	Theoretical course	5
	Drawings and memoirs	2
History (including written compositions)		7
Literature do. do.		7
Landscape drawing		4
Drill and military instruction		7
Conduct		3
	Total	50
German		4
English		3

Minimum exacted in the examination.

In order to pass into the Senior Division, a candidate must, firstly, obtain in the military subjects a minimum of six (or nearly one-third marks, the maximum being represented by 20) in *each* subject, and a general mean of 10 (half marks) in the whole examination; and, secondly, in the subjects of general instruction he must obtain a minimum of four (one-fifth marks) in each subject, and a general mean of eight. Those who do not obtain this minimum are reported to the Minister of War. They are dismissed from the school, and obliged to enter the army as privates, unless on the ground of illness or other extenuating circumstances they are recommended for permission to remain a second year in the Junior Division. This recommendation must be made by the Councils of Instruction and Discipline, and be supported by the Commandant of the school.

Course adopted with those who fail to pass.

Second year's examination.

The final examination of the Senior Division (*examen de sortie*) extends over all the subjects studied during the two years, but has more especial reference to those of the second year. The final classification depends partly on the examination, partly on the marks obtained during the year, and partly on the results of the first year's classification, one-tenth of the marks gained in which are carried forward. In the second year, however, the comparative importance of the examination before the juries is increased, the marks awarded by the examiners having three times the value of those assigned to the school work.

Relative importance of the subjects.

The "co-efficients of importance" of the various subjects in the second year are as follows:—

			Infantry.	Cavalry.
Topography.	Theoretical course		4	4
	Drawings, memoirs, and surveys		5	5
Fortification.	Theoretical course		4	4
	Drawings, memoirs, and practical work		3	2
Artillery.	Theoretical course		3	3
	Practical work and musketry practice		2	1
			34	32
Legislation and administration.	(including the keeping of company accounts)		5	5
Military history and art.	(including memoirs)		5	5
Military hygiene			1	1
Landscape drawing			2	2
Special instruction for Infantry.	Theory of drill		4	
	Practical drill		3	
	Military regulations		2	
	Riding		1	
			10	
Special instruction for Cavalry.	Riding			3
	Theoretical and practical drill			7
	Veterinary science			2
				12
Conduct			6	6
			50	50
German			4	4
English			3	3

Conditions of obtaining a commission.

In order to pass the final examination the same conditions in regard to obtaining a minimum number of marks are exacted as for promotion from the Junior to the Senior Division. In addition to the above conditions, no pupil is eligible for the rank of *sous-lieutenant* unless he is thoroughly able to take command of and drill troops of the arm for which he is a candidate. The practical proficiency of every one in this respect has to be proved before a board of cavalry or infantry officers, as the case may be, belonging to the school. A thorough acquaintance with all drill up to battalion drill is required from the infantry, and up to squadron drill from the cavalry cadets. A classification in order of merit of the cadets who fulfil the various necessary conditions is drawn up by the examining juries, under the superintendence of the Inspector-General of the school, and is forwarded to the Minister of War. The candidates have the choice of regiments in the order in which they stand on this list, those who are lowest down having to take their chance of any regiments in which there are vacancies.

A practical knowledge of drill required.

Appointment to the service.

Number of failures in the examination.

The attainments of the first 30 or so on the list at the final examination are said to be generally very good; about 100 more show considerable ability, but there is a great falling off towards the bottom of the list. There appear to

be on an average about eight or ten failures annually in the examination at the end of the first year, but not above one or two in the second year's examination. The principal subjects in which failures occur are said to be geometry, physical science, and the theory of drill. Bad conduct also leads to a certain number of dismissals. Except, however, when failure in the examination is accompanied by bad character, the rule regarding dismissal from the school or forfeiture of a commission does not seem to be very rigidly enforced. Not only illness but other extenuating circumstances are taken into consideration. Out of 11 failures at the last examination of the Junior Division eight cases met with indulgent consideration, the pupils being allowed to remain another year in the same Division; three only were dismissed, two of whom were sent into the army as privates, the third, a foreigner, was sent back to his friends. Two other pupils, dismissed for misconduct, were sent into the ranks. Three on the ground of prolonged absence from illness were allowed to remain another year in the Junior Division. At the final examination at the same time there was only one failure in obtaining the required minimum; in this case the pupil was allowed to remain a third year at the school. Three others were allowed a similar indulgence on the ground of prolonged absence.

Penalties attached to idleness.

Idleness during the course is not punished by dismissal, unless it results in failure to obtain the required minimum of marks in the examination at the end of the year. The punishment of dismissal at other times of the year is reserved for misconduct. The periodical *interrogations*, however, are a constant test of the pupils' diligence. Failure in any of these entails a certain amount of punishment. A pupil who obtains less than five out of 20 marks at an *interrogation* is punished with from two to four days' punishment drill; any one marked with zero is subjected to six days' drill. These punishments are increased in severity if the idleness is habitual At the end of every three months those whose marks in any subject are below a fair average, are admonished before the Council of Instruction and reported to the Minister of War. In some cases idleness is punished by the offender being kept up for part of the vacation. It also entails loss of leave on Sunday, as no pupil whose marks do not reach a certain standard is allowed this privilege. On the other hand, a considerable stimulus to industry is afforded by the conditions on which leave is granted, the privilege being more frequently allowed to those who have the highest marks for study. Admission to the first class and promotion to the rank of non-commissioned officer are almost entirely the reward of

Stimulus afforded to industry.

proficiency in study, and the subsequent retention of the privileges attached to these positions is dependent on industry, as promotion is necessarily forfeited by all who fall below the first half in the periodical classifications. A few prizes in the shape of swords, field-glasses, &c. are given, but they do not give rise to much competition. The choice of regiments allowed to those near the top of the list on quitting the school is a certain stimulus to work for a place. But the main source of competition at the school is the chance of admission to the Staff Corps. A certain number of those highest on the list at the final examination are allowed to compete for admission to the School of Application for the Staff, with such candidates among the sub-lieutenants of the army as present themselves. The number admitted to this competition is generally double the number of vacancies at the Staff School, and averages from 36 to 44 each year;* it is said that the highest on the list always avail themselves of the privilege, admission to the Staff Corps being regarded as a great prize. Formerly appointments in the cavalry supplied a further object of competition, but this is now no longer the case, as under the present arrangements this branch of service is selected at the time of joining school.

Admission to the Staff Corps the great object of competition.

Character of the pupils for industry.

The industry of the pupils is represented as being somewhat partial. The competition for the Staff Corps is chiefly confined to a certain number who are likely to be near the top of the list. It appears to be a disadvantage of the system of marks adopted that the probable result of the final examination can be foreseen at a comparatively early period.† The best pupils have the stimulus of competition for the Staff Corps, while the worst are kept up to the mark by the fear of not reaching the minimum standard; but among the majority, who occupy the intermediate position, there is little incentive to work; they soon find, on the one hand, that they have no chance of the Staff Corps, and on the other, that there is little fear of their failing entirely. Considerably greater interest appears to be taken in the drill and practical work

* This was the arrangement at the time the school was visited (November 1868). Since that date, however, a new regulation has been introduced, by which a certain number of the students who stand highest on the list in the final examination at St. Cyr are admitted to the Staff School without undergoing a second examination. A further account of the recent changes will be found in Appendix G, page 520.

† It seems to be thought that, as a general rule, the marks afford a fair criterion of the real abilities of the pupils; the final result is obtained by such a number of different means that little is left to chance. The weak point of the system appears to be the difficulty of preventing the professors and officers of the school from being, perhaps unconsciously, influenced in favour of individuals.

than in the theoretical instruction. But probably with the strict surveillance to which all are constantly subjected, the entire absence of any necessity or even means for private study, and the very slight opportunities for amusement, there cannot be much of what would be called idleness in an English school.

Admission to the Staff School.

The candidates admitted to compete for the Staff Corps are examined in Paris for admission to the Staff School, together with such sub-lieutenants of the army as offer themselves, about a fortnight after leaving St. Cyr.* Those who are successful enter the Staff School in January, the remainder join the regiments which they have selected.

Concluding Remarks.

Proportion of officers of the army furnished by St. Cyr.

St. Cyr furnishes nearly the whole, certainly the very great majority, of the officers of the Staff Corps. In the Cavalry and Infantry two-thirds of the officers might be supplied by the school, as by law only one-third of the vacant commissions are reserved for promotion from the ranks. In order, however, to increase the popularity of the service, considerably more than this proportion of commissions are bestowed upon non-commissioned officers, and consequently the numbers at St. Cyr are only calculated to supply somewhat less than one-half of the vacancies. Moreover, it appears that there are many more resignations among the officers who come from St. Cyr than among those who rise from the ranks, so that as a matter of fact the former do not at any time constitute even this proportion of the officers actually serving the army. Little more than one-third of the officers at the present time are actually St. Cyr men. The proportion is probably somewhat greater now than it was in 1856, as the school is generally kept up nearly to its full establishment of 600, and it appears that of late years there has been a growing wish to increase the proportion. At the same time, there scarcely seems to be, even among officers who have been educated at St. Cyr, the decided opinion that might have been expected, as to the professional superiority of officers who have had a scientific education. Not only are resignations much more numerous among the St. Cyr officers, but it is also said that very few of them keep up by study, after entering the army, the advantages which they have had in their early instruction. The general notion in France seems to be that, except for the *état-major* and the scientific corps, the special theoretical knowledge acquired at

The feeling in favour of a scientific education for officers of the line is apparently not very strong in France.

* See note (*) on preceding page.

But for the higher commands, officers who have been educated at St. Cyr are preferred.

a military school is not necessary for the general body of officers. The promotion, however, of the St. Cyr officers certainly appears to be quicker even in the lower ranks, and for more important positions a decided preference is given to them. Promotion to any rank above that of major being entirely by selection, while up to that rank it is partly also by seniority, the proportion of St. Cyr men becomes gradually greater in the higher ranks. It was stated that among the colonels the proportions which exist between the two classes of officers in the lower ranks are probably reversed—that is to say, that two-thirds have been educated at St. Cyr while only one-third have been promoted from the ranks. It is said that some young men even of good family enter the army as private soldiers in the hopes of obtaining their promotion, rather than go through the laborious course at St. Cyr, although at the very least three years must elapse before they can become sub-lieutenants.

Opposite views entertained in the French army regarding St. Cyr.

Two antagonistic views appear to be held in France regarding St. Cyr. On the one hand in the opinion of many, probably of the majority of officers, the establishment should be made strictly and exclusively a preparatory establishment for the instruction of candidates for commissions before entering the service. In this view the admission of non-commissioned officers and soldiers already in the army at a more advanced age than the other pupils is considered objectionable, both as interfering with the true character of the school, and as conferring no advantage upon the classes for whom the benefit is really intended. On the other hand there seem to be at least some distinguished officers who are inclined to question the wisdom of educating young men who are intended for officers entirely by themselves, apart from the other classes of the community, and treating them like private soldiers. They would be disposed to prefer something like the Prussian system by which a liberal education is made the condition of admission to the army, and special professional instruction is deferred until a somewhat later period, after actual service has been for a time performed and a certain amount of acquaintance with military duty has been acquired.

THE SCHOOL OF APPLICATION FOR THE STAFF.

(*Ecole Impériale d'Application d'Etat-major.*)

Organization of the French Staff.

The staff of the French army consists of the following different departments :— Departments of the French staff.

1. The *état-major général,* or general staff of the army.
2. The *état-major des places.*
3. The *état-major* of the Artillery.
4. The *état-major* of the Engineers.

The *état-major général* comprises, The *état-major général.*

(*a.*) The Marshals of France and all general officers.

(*b.*) The *corps d'état-major,* or Staff Corps.

(*c.*) The *intendance militaire,* or administrative staff, whose duties nearly correspond to those of the newly-created Control Department in our service. Admission to this department is determined by competitive examination open to all captains of the army.

The *état-major des places* consists of officers whose duties are somewhat similar to those of town and fort majors in our service. They are selected from the army generally without any special qualifications, and are placed on a sort of retired list. The *état-major des places.*

The staff of the Artillery and Engineers is composed exclusively of officers belonging to these services respectively. The artillery staff includes both the officers serving on the staff of generals of that service, and those employed in the various artillery manufacturing departments; the engineer staff are employed in the charge of fortresses and military buildings other than those specially connected with the artillery service. The Artillery and Engineer staff.

It is the *corps d'état-major,* or Staff Corps, which corresponds to the staff in the sense in which the word is ordinarily used in our service. The officers belonging to this department constitute a special corps, entirely distinct from the rest of the army, to which admission can only be obtained by passing through the School of Application for the Staff, situated in Paris. At this school officers are trained for the staff immediately after entering the army, before they have done any regimental duty, and after successfully passing through the school they become permanently members of the Staff Corps. It occasionally happens that at a later period an officer obtains permission to quit the *corps d'état-major* and enter the line, and a few on obtaining the rank of captain compete for admission to the *intendance.* By the existing regulations exchanges are also allowed between officers of the Staff Corps The Staff Corps.

and those of the line, on condition of the latter passing the final examination of the Staff School. In practice, however, such exchanges never occur, so that practically in France a candidate for employment on the staff must make his selection of the Staff Corps at the time of entering the service, and this selection, when once made, in most cases definitely determines his future career.*

Numbers of the Staff Corps.

The strength of the *corps d'état-major* in time of peace is 580 officers, viz. :—

35 Colonels.	300 Captains.
35 Lieutenant-colonels.	100 Lieutenants.
110 Majors.	

Colonels on being promoted to the rank of general officers cease to belong to the Staff Corps: they then form part of the *état-major général* of the army, of which the *corps d'état-major* is a special branch.

The staff of the Artillery and Engineers are, as has been observed, supplied by officers of these services, and not by the Staff Corps: but appointments on the general staff of *corps d'armée* and divisions can be held only by officers of the *corps d'état-major*.

Strength of the staff of *corps d'armée* divisions, and brigades.

The usual strength of the staff attached to the different commands in time of peace is as follows:—

To a corps d'armée:

1 chief of the staff—a brigadier-general.
1 sub-chief—a colonel or lieut.-colonel.
3 staff officers—majors or captains.
2, 3 or more aides-de-camp, according to the rank of the general.

To a division:

1 chief of the staff—a colonel or lieut.-colonel.
1 sub-chief—a major.
2 staff officers—captains.
Aides-de-camp, according to the rank of the general.

To a brigade:

1 aide-de-camp, or orderly officer (*officier d'ordonnance*).

Aides-de-camp need not necessarily be selected from the Staff Corps.

The position of an aide-de-camp is not of such an exclusively personal character as in our service; he is also employed on general staff duties, and in a brigade he performs the combined duties which with us are separately assigned to an

* Since the above account was written, some important modifications have been made (by regulations introduced in July 1869) in regard to the organization of the Staff Corps. A full account of the new system will be found in the Appendix, page 520.

aide-de-camp and a brigade-major. A general officer is not obliged by the regulations of the service to select an officer of the Staff Corps as his aide-de-camp. Practically, however, almost all generals commanding *corps d'armée* or divisions do so, in consequence of the important duties devolving on their aides-de-camp; but brigadier-generals often select regimental officers. In such cases, however, their selection is restricted to officers of the troops immediately under their own command, and in the event of the troops being moved into another district, or of the general quitting the station, the officer returns to his regimental duty. Moreover, regimental officers so employed do not bear the title of aide-de-camp (which is confined to officers of the Staff Corps), but are called *officiers d'ordonnance*, or orderly officers. They can be selected in the Cavalry only from second captains or first lieutenants, and in the Infantry from first lieutenants exclusively.

The *depôt de la guerre.*

Independently of employment on the general staff of military districts, a very important part of the duties of the Staff Corps consists in those connected with the "*depôt de la guerre*," or topographical department. This department is divided into three sections, respectively concerned with—

(1.) The charge of historical archives and the library.
(2.) Geodetical and topographical operations, connected chiefly with the surveys of France and Algeria (the first *bureau*).
(3.) Historical compilations, military statistics, the collection of maps and plans (the second *bureau*).

The survey of France and Algeria is in the hands of the Staff Corps.

The survey department was originally in the hands of a special corps, the *ingénieurs géographes*. This corps was, however, suppressed in 1831, and the work of carrying on the trigonometrical survey was transferred to the Staff Corps.

The survey of France is now completed, though the work is not yet fully engraved; that of Algeria is at present in process of execution. A large number of officers of the Staff Corps are constantly employed under the *depôt de la guerre*, some at the central office in Paris, others on the survey in Algeria. The number thus employed at present is about 50; while the survey of France was going on it was fully double that number. Officers of the Staff Corps are also frequently employed on special missions to foreign countries, and as military *attachés* to the embassies abroad.

The consulting committee of the staff.

A board, consisting of five generals of division, with a colonel of the staff as secretary, and called the *comité consultatif d'état-major*, is attached to the War Office, for the purpose of advising the Minister on all matters connected

with the Staff Corps. Reports regarding the examinations held at the Staff School are forwarded to this board, and the final examinations of the students quitting the school take place in the presence of its members.

Disadvantages of the system of making the Staff Corps a distinct service.

The *corps d'état-major* is the most aristocratic, and, with the exception of the Artillery and Engineers, the most highly educated branch of the French army. But its existence as a special corps, distinct from the rest of the army, though presenting many advantages, is in some respects considered, even by the members of the corps, not to be without its drawbacks. It is allowed that there is much to be said in favour of the English system of deferring any special training for the staff until an officer has completed a certain length of service. At the early age at which the choice of a staff career is made in France, candidates may select it who afterwards prove little fitted for staff employment; youthful ability as displayed at the Staff School is not always found to be accompanied in later life by the practical qualifications required in a staff officer. Yet by the French system even officers who may prove to be deficient in these qualifications cannot be excluded from staff employment, although naturally they would not be appointed to the staff of an army on active service.

Difficulty of securing the requisite qualifications of a staff officer at an early age.

By deferring admission to the Staff School until a later period, when an officer's character has been tested by the performance of regimental duty for a few years, it seems to be thought that a better guarantee might be obtained for securing in candidates for admission the practical qualities requisite in a staff officer. The exclusive character of the Staff Corps also apparently causes a certain amount of jealousy to be felt towards its members by the rest of the army. This, it is thought, would be obviated if officers, after serving for a time on the staff, returned to do duty with their regiments; while such an interchange would also give the staff the advantage of a more intimate acquaintance with regimental life.* In addition to this, promotion, though quicker in the lower ranks of the Staff Corps than in the other services, is in the higher ranks very slow, as only a small proportion of promotions to the rank of general officer are given to the *corps d'état-major*. The number of places in the list of general officers reserved for the Staff Corps seldom much exceeds four among the generals of division, and eight among the generals of brigade.

Exclusive character of the corps.

Slowness of promotion in the higher ranks.

* One of the objects of the recent changes made in the organization of the Staff Corps appears to be to obviate the disadvantages arising from the exclusive character of the service.

Promotion in the Staff Corps is regulated by the same principles as in the rest of the army, *i.e.*, up to the rank of major it is partly by seniority and partly by selection, above that rank it is entirely by selection. The rank of captain in the Staff Corps is generally obtained by seniority in from three and a half to five years after leaving the school, and by selection in as short a period as two years. The rank of major is reached by officers about the age of 40, on an average. Above this rank, however, the rate of promotion becomes much slower. Marshal MacMahon and General Trochu, who both originally belonged to the Staff Corps, were mentioned as instances of officers who, by quitting the corps on attaining the rank of captain and entering the line, have gained great advantage in regard to promotion.

Promotion in the Staff Corps.

The Staff School.

A Staff School was first established in France in the year 1818. Previously to this period no special qualifications had been required in the French service from officers employed on the Staff; they were appointed from regimental officers of all branches of the service, without undergoing any previous training for their duties. The disadvantages of this system were proved during the wars of the Revolution and the Empire, and shortly after the restoration of peace Marshal Gouvion St. Cyr, when Minister of War, determined to provide the army with a permanent and highly educated body of Staff officers. With this object he established the *corps d'état-major* as a distinct department, and founded a School of Application for the purpose of affording a special training to candidates desirous of admission to this branch of the service. The school, at the time of its institution, is said to have been formed on the model of our own Senior Department at High Wycombe, the success of which in providing our army with a highly trained Staff, during the Peninsular War, had been remarked by French officers. A Royal Decree of the 6th of May 1818, announced the formation of the *corps d'état-major*, and the institution of the School of Application for the Staff.

Origin of the school.

Since that date decrees have from time to time been issued introducing modifications in the organization of the Staff Corps and of the School of Application. Of late years, however, there have been few changes in the general system of the school; its condition at present is much the same as at the time it was visited by the Commissioners of 1856. Such alterations as have been made are more in matters of detail than in principles Some changes have taken place in

The general character of the school is little changed since 1856.

regard to the mode of admission to the school and in the entrance examinations; and certain modifications have been introduced in the course of the studies; but the general character of the education given at it remains unaltered.

Duration of the course.

The course of instruction at the school commences on the 1st of January, and lasts two years. It cannot be completed in a shorter time, and it is only in cases of illness that an extension of the period (never, however, exceeding three years) is permitted.

Number of students.

The number of students admitted annually is fixed by the Minister of War, with reference to the vacancies likely to occur in the Staff Corps. The average number of students under ordinary circumstances is 50, 25 of whom are admitted each year; but the number varies from year to year, and on the 1st of January of the present year (1869) only 20 new students were admitted.

Admission to the school from the Polytechnic, St. Cyr, and the line.

Two or three places, according to the number of vacancies occurring, are reserved for the best students from the Polytechnic who select the *état-major;* the remainder of the vacancies are open to competition among a certain number of the pupils at the head of the list in the final examination at St. Cyr (the preparatory school for the line), and an equal number of sub-lieutenants already in the army who have served one year in that rank, and are under 25 years of age.* The number of pupils from St. Cyr admitted to the competition for admission to the Staff School is usually double that of the vacancies, after deducting those reserved for the Polytechnic students. When under ordinary circumstances 25 admissions take place, three are assigned to the Polytechnic, and for the remaining 22 vacancies the 44 best pupils from St. Cyr are admitted to compete with the sub-lieutenants of the army. At the last examination, with 20 admissions, two places only were reserved for the Polytechnic, and 36 pupils of St. Cyr were allowed to compete for the remainder. A very small proportion of sub-lieutenants already in the service offer themselves for the competition. The number seldom exceeds eight, or at the most 12, and of these not above two or three are generally successful. The Polytechnic pupils have a right to the places reserved for them without further examination, and are placed at the head of the students admitted each year. The pupils from St. Cyr admitted to the competition, and the sub-lieutenants who present them-

* This was the arrangement at the time the school was visited in November 1868. By the new regulations, adopted in July 1869, the number of students admitted annually to the school will be considerably increased, and the mode of admission will be modified. The changes consequent upon the new system, which affect more or less all the statements in the text regarding the method of admission to the school, are fully described in the Appendix, page 520.

selves, are examined at the Staff School in the month of August, about a fortnight after the final examination at St. Cyr.*

Entrance examination.

The examination is conducted by a board of officers appointed by the Minister of War. The subjects of examination are mainly the same as those of the final examination at St. Cyr, except that no choice of modern languages is left to the candidate, German being obligatory. The programme of the subjects is as follows:—

Subjects of examination.

(1.) Trigonometry and topography; scales, measurement of bases, solution of triangles by means of logarithms.

(2.) Regular topography; surveying, instruments used; levelling; conventional signs; modes of representing ground by contour and *hachures*.

(3.) Irregular topography; method of executing rapid field sketches and reconnaissances.

(4.) Military art and history, comprising—

- (*a.*) History of military institutions at various periods;
- (*b.*) Present composition of the French army;
- (*c.*) Minor operations of war, out-posts, convoys, surprises, &c.;
- (*d.*) History of some of the most memorable campaigns of modern times, *e.g.*, campaigns of 1796-97 in Italy, of 1805 and 1809 in Germany.

(5.) Artillery and science of projectiles.

(6.) Field fortification.

(7.) Permanent fortification.

(8.) Castrametation and duties in camp.

(9.) Military law.

(10.) Military administration, confined chiefly to the regulations regarding the pay and interior economy of a company.

(11.) Infantry drill, comprising squad, company, battalion, and skirmishing drill.

(12.) German language.

The examination is chiefly *vivâ voce*.

In all the above subjects, except German and military drawing, the examination is exclusively *vivâ voce*. In German,

* Formerly the number of admissions to the Staff School every year was 25. Of this number three were assigned to the Polytechnic, the remaining 22 were competed for by the first 30 students on the final list at St. Cyr, and an equal number of *sous-lieutenants* in the service. The St. Cyr pupils, however, were not subjected to a fresh examination. The *sous-lieutenants* went to St. Cyr, were examined in the same examination as the St. Cyr pupils, and were intercalated in the list according to their order of merit.

in addition to the *vivâ voce* examination, an essay is written by the candidates. In military drawing a topographical sketch has to be executed in connexion with a memoir on some question of military art which is proposed to the candidates. Eight hours are allowed for the completion of the memoir and accompanying sketch. The candidates are further subjected to a practical examination in riding, in order to test their fitness for the duties of the staff.

The students are commissioned officers on joining the school.

The examination lasts about 10 days, of which one day is devoted to paper-work. The successful candidates are placed in the order of merit as represented by the examination, but rank below those admitted from the Polytechnic. They join the school on the 1st of January with the rank and pay of *sous-lieutenants*, and wearing the uniform of the Staff Corps; they are, however, posted to regiments, on the strength of which they continue until definitely admitted to the Staff Corps after passing through the school. On leaving the school they obtain the rank of lieutenant. The average age of the students at the time of admission is from 20 to 21.

Establishment and Organization.

Establishment.

The establishment of the school is as follows:—

I.—*General Staff.*

Six officers on the staff.

The Commandant—a general of brigade.
The Second Commandant and Director of Studies—a lieutenant-colonel of the Staff Corps.
A major of the Staff Corps.
Three captains of the Staff Corps.

II.—*Professors and Instructors.*

Nine military instructors.

Nine military professors and assistant professors, viz.:—

1 Professor of military administration—an officer of the *intendance*.
1 Professor of geodesy and topography.
1 Assistant professor of topography.
1 Professor of astronomy, physical geography, and statistics.
1 Professor of military art and history.
1 „ fortification—an officer of Engineers.
1 „ artillery—an officer of Artillery.
1 „ descriptive geometry.
1 Assistant professor of descriptive geometry.

Two cavalry officers.

Two officers of cavalry are also attached to the school for the purpose of giving instruction in riding.

The civilian instructors are five in number, viz.:— Five civilian instructors.

2 Professors of German.
2 „ landscape drawing.
1 Fencing master.

The establishment of the school further includes:—

1 Surgeon.
1 Veterinary surgeon.
1 Treasurer and librarian.
1 Assistant ditto

The military professors, with the exception of those of administration, fortification, and artillery, are all members of the Staff Corps.

The officer second in command, though bearing the title of Director of Studies, is not exclusively employed on duties connected with the direction of the instruction. He superintends the studies, and keeps a register of the marks gained by the students, but he also exercises a general supervision over the discipline of the school, and all reports addressed to the General Commanding pass through him. The more immediate control of the discipline and interior economy, however, rests with the major and the three captains of the general staff, who are also charged with the instruction of the students in everything relating to drill, military exercises, and fencing. The captains are further required to superintend part of the out-door surveying operations, and to assist in the instruction in this subject. Duties of the second in command. And of the major and captains.

The professorships are thrown open to competition, the candidates for a vacancy being subjected to an examination before the *comité consultatif d'état-major*. Officers, however, who have been previously employed as professors at other military schools, or have been assistant professors at the Staff School, may, on the recommendation of the Commandant, be appointed to the professorships without competing. The other officers attached to the school are appointed by the Minister of War. It does not appear that in their selection any peculiar qualifications are sought for beyond the fact of their belonging to the Staff Corps. The special fitness of an individual for the post is, therefore, to a considerable extent, a matter of chance, though the fact of his belonging to the Staff Corps ensures his having had the same education which he is now called upon to superintend. There is no limit to the tenure either of the professorships or of the other appointments. Appointment of the professors and other officers.

In accordance with the system usually followed in French schools a Council of Instruction exercises a general control over the studies. Council of Instruction.

It is composed of the General Commanding as president.
The Director of Studies.
Three military professors appointed yearly in rotation.

The other professors and assistant-professors, and the officers of the staff of the school, may be called in to assist the Council, but (except in drawing up the lists of the examinations) they have no vote. The Council regulates the programmes of instruction in the various courses, decides upon the text-books to be employed, and considers all questions regarding changes or improvements in the course of instruction which experience may suggest. It cannot, however, introduce any changes in the general course of study without the sanction of the Minister, who takes the advice of the *comité consultatif d'état-major* on proposals which are made to him. The Council of Instruction does not interfere with the details of the daily routine of studies, the immediate superintendence of which is left to the Director of Studies.

Council of Administration.

The general administration and financial affairs of the school are in the hands of a Council of Administration, composed of—

The General Commanding—president.
The Director of Studies.
The major and two of the captains of the staff of the school.
A professor and assistant professor.
The treasurer.

There is no regularly-constituted Council of Discipline, but a board is assembled at the close of each year to decide upon the marks to be given for conduct.

Annual expenses.

The annual expenditure on the school, as extracted from the Budget for 1869, is as follows:—

	frs.
Staff.	
Pay of civilian professors, treasurer, clerks, and non-commissioned officers and soldiers employed in the riding department (exclusive, however, of the pay of all military officers) .	63,000
Instruction and Administration.	
Purchase of books, instruments, maps, &c.; expenses incident to surveys; fuel and light .	30,000
Maintenance and repair of buildings . .	6,000
Regimental pay of officers employed in superintendence and instruction	111,870
Regimental pay of 50 officer students . .	103,000
Total	313,870

Or about 12,500*l.*, of which about a third consists of the regimental pay of the students. This expenditure, however, does not include the expense of the purchase and maintenance of the horses kept for the service of the school. No payments are required from the students.

The School Buildings.

Buildings. The Staff School is situated in the Rue de Grenelle St. Germain, near the Invalides.

Accommodation for the students. The students are all quartered within the buildings, but take their meals outside. In most cases each student has a room to himself, and in no case are more than two lodged in the same room. Servants are provided for them, private servants being forbidden. The General Commanding and the officers of the staff of the school live within the buildings.

Lecture rooms, &c. The accommodation for purposes of instruction consists of two lecture rooms, one for the students of each year; three *salles d'étude*, in which the greater part of the time devoted to study is spent; and various smaller rooms for examinations, &c. The school also contains a good library, which is accessible to the students, and a room for fencing. Immediately adjoining the buildings are a large riding-school and stables for the horses—100 in number—kept for the use of the students. Additional buildings in connexion with the establishment are at present in the course of erection.

Course of Instruction.

The students are divided into two divisions, the senior and junior, corresponding to the year of their admisssion. In all instruction the divisions are kept entirely apart. About nine hours daily are on an average occupied in work. The day's work commences at six, half-past six, or seven, according to the season, and continues until five in the afternoon. With the exception of an interval of an hour for breakfast, and two short intervals of a quarter of an hour each between the studies, the time is constantly occupied. A considerable portion of each day, however, is devoted to riding, drill, or other out-door exercises; and a great deal of time is spent on mere mechanical work in drawing. There are never more than two lectures in the day, one of which is always either on German, the drill-book, or veterinary science. In the subjects involving more head-work and hard study, there is only one lecture of an hour and a half each day.

Time devoted to study daily.

Daily routine of work. The ordinary routine of the day during the summer portion of the course (from April onwards) is much as follows.*

* A table of the employment of time is given in the Appendix, page 508.

The students rise at a quarter to 6; at 6 o'clock there is a roll-call; from 6 to 9 the time is generally occupied with riding, fencing, theoretical and practical instruction in drill, or German lessons. From 9 to 10 an interval is allowed for breakfast, after which two hours and three-quarters are daily spent in the *salles d'étude*, where the students are engaged in geometrical, topographical, or fortification drawing, and in the preparation of memoirs connected with these subjects. After a quarter of an hour's interval, a lecture of an hour and a half takes place for the students of each division, followed by three-quarters of an hour spent in the *salles d'étude* in completing notes and studying the subject of the lecture. From a quarter past 3 to half past, another interval is left free; and from half past 3 to 5 the time is spent either in riding or landscape drawing.

Out-door work in summer.

After 5 the students are at liberty for the evening. About seven months of the year are spent in the manner above described, but for three months in the summer the students are engaged almost entirely in out-door work, executing surveys, reconnaissances, &c. A good deal of time appears to be occupied with the examinations, especially in the second year for the students of the senior division, and there is a short vacation of about three weeks at Christmas.

The subjects taught at the school,* all of which are obligatory, comprise:

Descriptive geometry.

(*a.*) *Descriptive geometry*, as applied to perspective, dialling, architecture, and machinery. 47 lectures are given in this subject, entirely during the first year. It is not studied by the senior division. In connexion with it numerous perspective drawings, elevations of buildings, and plans of machinery are executed.

Cosmography, &c.

(*b.*) *Cosmography, physical and military geography, and statistics.*—The course in this subject includes a certain amount of astronomy, physical science (including electricity and magnetism), meteorology, an outline of the elements of geology, and the general principles of political economy. 26 lectures are given in this subject in each year; the first year's course is confined almost entirely to astronomy; the remainder of the course is studied during the second year. During the first year projections of maps are drawn, and in the second years memoirs are written on questions of physical and military geography.

Typography.

(*c.*) *Topography and geodesy*, with their applications on the ground. Under this subject are included also a

* A translation of the programmes of instruction in the various courses is given in the Appendix, page 510.

short course of spherical trigonometry, and the general principles of optics, so far as they are required to understand the instruments used in surveying. 19 lectures are given during the first year in spherical trigonometry, and ordinary military sketching; in the second year 26 lectures are devoted to optics and higher geodesy, or trigonometrical surveying. Various topographical drawings and surveys are executed during each year of which more will be said hereafter.

(*d.*) *Artillery:*—comprising the science of projectiles, small arms; the organisation of field and siege artillery, siege batteries, military bridges, armaments of fortresses, attack and defence of places, coast defences. 19 lectures in the first year and 25 in the second are devoted to this subject. Drawings and descriptive reports of guns and artillery carriages, of various sorts of military bridges, and of batteries, are also executed, but no practical instruction is given in the actual construction of either batteries or bridges. Artillery.

(*e.*) *Field and permanent fortification,* including the construction of barracks and military buildings. The first year's course consists of permanent fortification and military buildings, in which 17 lectures are given. During the second year 25 lectures are given in defilade, field fortification, military roads and communications, sieges and mining. Drawings of military buildings, plans of permanent works, projects for the defence of positions by field works, and plans showing the mode of defilading a field-work with given conditions of ground, are executed. These drawings are in all cases accompanied by explanatory memoirs. The practical work connected with the course consists of tracing and profiling a field-work on the ground; a visit to the fortifications of Paris, followed by a description of the works; the execution of a reconnaissance of the approaches to one of the forts; and a report upon some existing fortress, giving a full description of it and an estimate of the forces and supplies required for its defence. Fortification.

In the actual construction of works on the ground, less instruction is given than might have been expected; in fact, little is done beyond tracing and profiling. The students, however, are supposed already to have learnt the details of construction at St. Cyr. Defilade is also only taught theoretically on paper, and in mining, siege works, and other

parts of field engineering no practical operations are executed. Both in artillery and fortification the course is considerably less extensive than that taught at Metz, and is intended to be confined chiefly to those points which have a direct bearing on the duties of a staff officer on service.

Legislation and administration.

(*f.*) *Legislation and military administration.*—The course of legislation includes some account of civil and international, as well as of military law. The subject of administration comprises military finance; the organisation of the barrack, hospital, supply, and other administrative services; the interior economy of all branches of the army; and the administrative duties of the staff on active service. 50 lectures in all are given in this subject, 28 during the first year, and 22 during the second. In connexion with the course visits are made to various government establishments, such as the arsenal, the clothing department, a military bakery, a military hospital, cavalry barracks, forage magazines, &c. After these visits, reports upon the various services connected with the establishments visited are sent in.

Military art.

(*g.*) *Military art.*—20 lectures are given in the first year, 30 in the second. The first year's course includes the organisation of the three arms, the military systems of foreign countries, and a description of minor operations of war, more especially reconnaissances. The second year's course comprises tactics and strategy, and concludes with an account of the organisation and general duties of the staff.

Essays on strategical and tactical questions, and reports on military positions, are written each year in connexion with the surveys executed during the summer months. An historical *précis* of a campaign, and official reports on points connected with the duties of the staff are also required from the second year's students.

The practical work in connexion with this course consists of laying out camps on the ground, and reconnaissances both mounted and on foot.

Veterinary science.

(*h.*) *Veterinary Science.*—About 30 lectures are given each year in this subject, which includes an account of the general management of horses and a description of horse equipments.

German.

(*i.*) *German.*—Three lessons weekly, of an hour each, are given in both years.

Landscape drawing.

(*k.*) *Landscape Drawing.*—Three lessons weekly, of an

hour and a half each, are given to the students of both divisions. Drawing from nature is also practised, and most of the surveys and field sketches made are accompanied by landscape views.

(*l.*) *Drill.*—The instruction in this subject is both theoretical and practical, the theoretical portion consisting mainly of explanations of the drill-book. Two hours a week are devoted to the theory, and three hours and a half to practical drill in both divisions. The practical instruction is entirely, and the theoretical chiefly confined to cavalry drill, the students being supposed to have acquired a sufficient knowledge of infantry movements at St. Cyr. A special course of infantry drill is given to those who come from the Polytechnic. For the others the instruction in infantry drill consists merely of the theory of *brigade* and *division* movements taught during the second year. The instruction in artillery drill is likewise only theoretical, and little time is devoted to it. Cavalry drill, on the other hand, is taught practically as well as theoretically; the students are drilled in the ranks mounted, and learn squadron drill by the aid of skeleton squadrons. They are also practised in bridling and saddling. One of the students is, in addition, on duty each day with the cavalry detachment attached to the school, and has to perform the regular duties of the orderly officer of a cavalry regiment. The students are also occasionally taken under charge of an officer to the field-days of the garrison of Paris, in order to give them an insight into the manœuvres of troops on a large scale. Drill.

(*m.*) *Fencing.*—Three lessons weekly of three quarters of an hour each are given during both years. The instruction in drill and fencing is under the charge of the major and officers of the staff. Fencing.

(*n.*) *Riding.*—Great importance is attached to this instruction; in addition to the mounted cavalry drill, which takes place twice a week, the students of each division attend riding school four times a week for an hour and a half or two hours on each occasion, so that practically they do mounted work every day. They go through the same course as the cavalry soldier, and are practised in leaping, vaulting on and off their horses, and the other feats of horsemanship taught in the riding schools of the French cavalry. Besides the military lessons of the riding-school, civilian and cross- Riding.

country riding form part of the regular instruction. During the last few months of their course at the school, the students of the senior division receive instruction in breaking young horses. The result of the great attention paid to riding is said to be that even those who have the least natural aptitude leave the school good riders.

Photography and telegraphy.

A short course of three lectures on photography as applied to the reproduction of maps and plans, and some instruction in telegraphy are given to the students of the junior division.

Time devoted to the various subjects.

The following table gives a general view of the course of instruction during the two years :—

First Year.	Lectures.	Second Year.	Lectures.
Descriptive geometry	47		0
Astronomy	26	Physical and military geography, &c.	26
Military topography	19	Optics and trigonometrical surveying.	26
Artillery	19		25
Permanent fortification	17	Field fortification and sieges	25
Military legislation and administration.	28		22
Military art	20		30
Photography	3		0

Both Years.

Veterinary science	30 lectures.
German	3 lessons a week.
Landscape drawing	3 „
Theory of drill	2 „
Mounted cavalry drill	2 „
Riding	4 „
Fencing	3 „

Mathematics and military history are not taught.

Mathematics are not taught at all at the school, though their applications to astronomy and surveying enter into the courses on these subjects. Military history also is not taught, its place being supplied by "military art," which is to a certain extent studied historically. The exclusion of military history from the course is accounted for on the ground that the great majority of the students have already learnt it while at St. Cyr. The neglect of the subject, however, is considered a matter of regret by the authorities of the school, who seem in favour of its introduction in place of military art.

Languages.

German is the only language taught at the school, and no great proficiency or conversational power appears, as a rule, to be acquired in it. Occasionally a few of the students

take private lessons in English, but at the present time none are doing so. No instruction is given either in gymnastics, swimming, musketry, or artillery practice; but, as will have been observed, great attention is paid to drill, riding, and fencing. For each of these subjects marks are given which count in the final classification of the students. Practical exercises.

Drawing occupies more time than any subject. Besides the three weekly lessons given in landscape drawing, two hours and three quarters daily in the *salles d'étude* are devoted to drawing of a more technical character connected with perspective, machinery, artillery, fortification, projection of maps and military topography. Yet, notwithstanding the time still devoted to it, the course is said to have been much reduced of late years, from a conviction that some portions of it were of little practical use. The great importance attached to geometrical and perspective drawing, and more especially to drawings of machinery, afford a contrast to the course of drawing as pursued at the Staff College at Sandhurst; while on the other hand considerably less is done at the *ecole d'état-major* in the way of plans of permanent fortification. The following general outline will show the nature of the drawings executed during the course:— Great attention paid to drawing.

(*a.*) *Geometrical Drawing.*—(Confined entirely to the first year.) Geometrical determination of shadows on some simple machine, and drawing of the object; perspective of an interior of a building; perspective of an exterior; tracing of sun dials; plan of timber-work; perspective views of country; plan, section, and elevation of machinery, with determination of the shadows. Geometrical drawing.

(*b.*) *Geographical Drawing.*—Projections of maps. Geographical.

(*c.*) *Artillery Drawing.*—Plans of boat, raft, trestle, and flying bridges; plan in detail of a breaching battery, elevation of a gun carriage or artillery wagon. Artillery.

(*d.*) *Fortification Drawing.*—Survey of a military building; plan showing the defilade of a field-work, the contours of the ground being given; project for the defence of a position with field works; plan of a fortress; reconnaissance sketch of the approaches to a work. Fortification.

Some of these drawings are executed entirely from copies in the *salles d'étude*, others are done from sketches taken from the objects themselves during the time devoted in summer to the out-door work.

In addition to the above, topographical drawing is carried on during both years. During the first year the students begin during the winter months with the ordinary con- Topographical.

ventional signs of topographical drawing, hill-sketching on different scales from copies, and drawing from models. In July they begin sketching on the ground. They first execute a preparatory survey on a large scale, which is followed by a regular survey of a considerable district. This survey is accompanied by a memoir giving topographical, statistical, and historical information regarding the district, and a report on some military position within it. A rapid field-sketch and two road reconnaissances accompanied by reports are also executed during the year. In the second year the time in winter is spent in drawing from models of ground, and in the reduction of plans to smaller scales. During the summer a regular survey, accompanied by the usual report, a rapid field-sketch and several road reconnaissances are executed as in the first year; in addition to which the students practice various operations of more scientific surveying, such as the measurement of a base, astronomical observations, and the trigonometrical triangulation of Paris. From the observations taken on the ground the calculation of the triangles and of the latitudes, longitudes, and altitudes of the various points is made at home; after which the work is plotted in.

Field sketching practised during both years.

Trigonometrical surveying in the second year.

For the ordinary surveys the plane-table is used to fix the chief points and the details are filled in with the compass. The more rapid field-sketches are executed with the compass alone. For the more scientific operations conducted by the students of the second year the repeating circle and theodolite are used. The scale ordinarily employed for the surveys and sketches is $\frac{1}{10000}$.

Instruments ordinarily employed.

During both years the students have also to execute various reconnaissance sketches both on foot and mounted. For this purpose they go out under charge of a captain in the neighbourhood of Paris. The time allowed for rapid sketches of this sort is generally from 10 to 5 in the day; the sketches are executed on the ground, and must be given up when the students come in; reports on the ground reconnoitred are written the following day from memory, and such notes as may have been taken. In the course of military drawing great attention is paid to *rapid* field sketching, executed within a given time, both mounted and on foot; but eye sketching without instruments, which is much practised in all the Prussian schools, is not taught here.

Importance attached to rapidity in field sketching.

It is during the three summer months of July, August, and September that the surveys and most of the other out-door work are executed. The surveys occupy a period of about six weeks, during which the students are entirely absent from the

Three months in the summer given up to out-door work.

school. They are sent to considerable distances, for instance, to the Vosges, Burgundy, &c. Last summer the work of the senior division was in Champagne. They are distributed into parties of 10, each of which is under the charge of an officer. On the conclusion of the surveys the students are occupied for the remaining portion of the three months in other out-door work nearer Paris, which does not necessitate their being entirely absent from the school. It is during this time that the visits to barracks, hospitals, fortifications, and other establishments are made. They are sent to Vincennes and other places to take drawings of military buildings, artillery *matériel*, manufacturing machinery, and works of fortification. The mounted reconnaissances, and for the senior division the trigonometrical triangulation, are also executed at this time. In all these expeditions the students are accompanied by an officer. While engaged in this work, however, they are generally only absent from the school during the day, returning there at night, and completing their work in the *salles d'étude*. Lectures also are partially continued during this period; it is only during the time occupied by the surveys—from the 1st of July to about the middle of August—that the theoretical instruction is entirely suspended.

General remarks on the subjects of instruction.

It will be seen that in the course of instruction some subjects, more especially political economy and international law, are introduced which are not strictly of a professional character. The object of these studies is probably to afford a preparation for the diplomatic and political missions on which the members of the *corps d'état major* are frequently employed. The importance attached to the scientific study of the higher branches of geodesy and of astronomy, so far as it is connected with operations of surveying, is accounted for by the fact that the trigonometrical surveys of France and Algeria are conducted by the Staff Corps. With the exception of the subjects to which allusion has just been made, of the somewhat undue importance attached to geometrical drawing, and of the deficiency of practical instruction in field engineering, the course at the school appears to be well fitted for giving an insight into the practical duties of staff officers. The exaction of great rapidity in the execution of all field sketches, the practice given in sketching and reconnoitring on horseback, and the great attention paid to instruction in riding seem specially deserving of notice.

Text books employed.

A few text-books only are employed, relating chiefly to fortification, topography, and reconnaissance. A very useful little book is also used, called "*Ayenda d'Etat-major*," which constitutes a sort of hand-book of field service for staff officers. In general reliance is placed on the notes taken at the

lectures; these notes are periodically examined by the professors, and marks are given for them. No lithographed copies of the lectures are distributed to the students as is done at St. Cyr and Metz.

Daily *interrogations.*

The system of *répétiteurs* does not exist at the school, but the students are subjected to daily *vivâ voce* examinations (*interrogations journalières*) by the professors. The marks given for these *interrogations*, however, have no influence on the final classification of the students, and are merely intended to afford information as to the diligence and progress of each individual.

The greater part of the work is done in the halls of study.

The halls of study (*salles d'étude*), as in all French schools, hold an important place in the system of instruction. They consist of three rooms opening into each other, each holding about 17 or 18 students. One room and half of another are occupied by each division, and every individual has a fixed place assigned to him. Here the students are required to study in preparation for the lectures, and aftewards to write up their notes. All drawings of every kind must necessarily be executed in the *salles d'étude*, and though the same rule is not enforced with regard to memoirs and other written exercises, it appears that in practice almost all work is confined to the time which must be spent each day in the *salles*, and that the students, except when preparing for an examination, study very little in private. During the time assigned to the execution of any drawing or report no one is allowed to occupy himself with any other subject until the specified work is completed. If it is finished before the fixed date, he is still obliged to attend in the halls of study, but he is permitted to work at such other subjects as he pleases, provided they form part of the course of instruction at the school.

Under the supervision of officers.

The two military assistant professors are specially charged with the surveillance of the students in the *salles d'étude*, and one of them is always present on duty to see that strict order is maintained, and that the students occupy themselves with nothing but the allotted work. The professor of each subject is also present to give explanations, whenever drawing or work connected with his course is going on.

Discipline.

The students subject to military law.

The students, as they hold commissions as sub-lieutenants, are in every respect subject to military law. They enjoy much more liberty than the younger pupils at St. Cyr, especially as after 5 o'clock they have the evening to themselves.

And are placed under considerable restrictions.

They are, however, still subject to considerably greater restrictions than the young officers to a regiment. Attendance at all studies is compulsory. During the day no

one is permitted to leave the school buildings except in the interval allowed for breakfast; and though free after 5 o'clock in the evening, every one is obliged to be in by 11 at night, except on Saturdays and *fête* days, when the time is extended to 12 o'clock. Each individual on coming into the school at night is required to sign his name in a book kept at the porter's lodge, and at the hour fixed for all to be in this book is inspected by the captain of the week. A student remaining out of the school at night is severely punished. After half past 10 no visitor is allowed to remain within the school, and the students are obliged to confine themselves to their own rooms. No one is permitted to keep a private servant or to have lodgings in the town. Gambling is expressly forbidden, and any one who is found to have got into debt is punished. The introduction of improper characters within the school is strictly prohibited. Leave of absence during the course of instruction is only granted for very special reasons, and cannot exceed eight days without the sanction of the Minister of War.

Maintenance of discipline.

The immediate maintenance of discipline rests with the three captains on the staff of the school. One of them is on duty every week; he calls the rolls, sees that the students are in at the proper hour at night, and is present during the lectures given by the civilian professors to maintain order. The first on the list of the students of each year is called the "*Chef de division*," but his duties appear to be confined to responsibility for the transmission of all orders to the members of his division; he has no power over the others in regard to discipline.

Punishments.

The ordinary punishments which can be inflicted by the authorities of the school are,—open arrest, close arrest, and imprisonment in a military prison. Dismissal from the school can only be inflicted by the sanction of the Minister of War. A student can be placed in open arrest by any of the officers employed at the school. The civilian professors have no power of punishment, but care is taken that an officer on duty is always present when they are in contact with the students. There is said to be little difficulty in the maintenance of discipline; the punishment of imprisonment is scarcely ever necessary; and during the last 20 years only about two instances of dismissal for misconduct have occurred.

Penalties attached to idleness.

There are also special punishments for idleness. A student whose work is unsatisfactory may be refused the privilege of leave on Sundays and holidays, and kept in to work on these days; or he may be obliged to come in every night at 8 o'clock. The latter punishment can only be inflicted by the

General Commanding. Dismissal on account of idleness never takes place during the course of the year, but it is entailed by a failure to reach the required standard in the examination at the end of the first year. Marks are given for conduct, and are taken into account in determining the classification of the students. These marks are given each year by a Board which assembles under the presidence of the General Commanding, and consists of the Second Commandant and the officers immediately charged with the supervision of discipline, namely the major and captains of the staff and the military assistant professors. The latter officers form part of the Board as they are employed in the surveillance of the students in the *salles d'étude*. The marks are proposed by the Second Commandant, discussed by the other officers, and finally decided upon by the voice of the majority of the board.

Conduct marks.

Awarded by a Board of officers of the school.

Examinations.

As previously stated the periodical *interrogations* which take place by the professors have no influence on the final classification of the students.

Marks gained during the school course count in the examinations.

Marks given for everything else done during the course, for all drawings, memoirs, and reports, and for the notes taken at lectures, as well as those for conduct, and for proficiency in drill, fencing, and riding are taken into account in determining the order of merit.

The final classification of the students depends partly on the marks given for these subjects (which with the exception of conduct marks are assigned by the several professors and instructors), partly on the result of general examinations in the various subjects of instruction. In assigning marks for any subject, whether in the examinations or during the school course of work, the following scale is adhered to :—

Scale of marks employed.

0	to	4 bad.
5	„	9 passable.
10	„	13 fair.
14	„	18 good.
19	„	20 very good.

General examinations in each year in June and November.

The junior division have two examinations to pass during the first year at the school; the first commences about the 1st of June, the second in November. The senior division have three examinations in the course of the year, as, in addition to the two examinations similar to those of the junior division, they have to pass a third and final one in the presence of the *comité consultatif d'état-major* before leaving the school. Their second examination consequently takes place somewhat earlier than November.

Both the examinations of the junior division, and the two first of those of the senior division take place before a jury composed of members of the school, and consisting of:— The board of examiners.

The General Commanding.
The Director of studies.
Two officers appointed by the Council of Instruction.
The professor of the subject in which the examination takes place.

All the examinations are *vivâ voce*, with the exception of those in German, in which a written essay is also required.

The examinations in June are much less important than those at the end of the year; the marks gained in them are carried forward, but are only allowed half as much value as is given to those gained in the second examination. Moreover the classification of the students formed at this time is solely dependent on their answers to the examination questions, the marks gained for drawings and other compositions not being taken into consideration until the close of the year. It is not necessary to obtain any minimum number of marks in the June examination, as is the case in that held at the end of the year; no portion of the course is terminated by it, and the students are again examined in the same subjects at the annual examination. The June examinations.

The examination at the end of the first year determines the promotion of the students to the senior division. It extends over the whole of the subjects studied during the year, and so far as they are concerned is final, as the subjects do not enter into the second year's examinations. The questions in each subject are put to the candidate by the professor of the course in the presence of the jury; the professor also proposes the marks to be given for the answers, and his proposal is discussed and decided upon by the jury. A series of questions to be asked in each subject—about 60 in all—is arranged before hand, and is communicated to the students; but as the questions put to each individual are drawn by lot, no one is aware of the exact points on which he will be questioned. The examination of a student in each subject lasts about 20 minutes. Examination at the end of the first year.

On the conclusion of the examination, the Council of Instruction draw up a list of the students arranged in order of merit. On this occasion all the professors of the school are associated with the Council of Instruction, and have a vote in the proceedings. In preparing this list all the marks given by the professors during the year, as well as those obtained both in the June examination and in that at the end of the year, are taken into account, the value allowed to the latter examination being double that of the former. The relative value attached to the marks obtained Classification of the students founded upon it. Relative importance of

the subjects of the first year's examination.

in the various subjects in the first year is determined by the following "co-efficients of influence":—

Descriptive geometry.	Examination		4
	Drawings		3
	Drawings of machinery.	Memoir	1
		Drawing	1
			9
Astronomy	Examination		4
	Drawings		1
			5
Topography	Examination		4
	Drawings		6
			10
Artillery	Examination		4
Fortification	Examination		4
	Drawings		2
	Memoirs and reports		2
			8
Military art	Examination		4
	Memoirs	On various questions	2
		To accompany the survey	1
			7
Drill			3
German			4
Landscape drawing			2
Notes taken at lectures			1
Conduct and discipline			2
Riding			3
Veterinary science			1
Fencing			1
Total			60

SUB-DIVISION of the CO-EFFICIENTS for DRAWING, &c.:

Survey with the compass	2	
Rapid field sketch	1	
Road reports and reconnaissances	1	6
First topographical drawing, scale of $\frac{1}{10000}$	$\frac{1}{2}$	
Second ditto, scale of $\frac{1}{40000}$	$\frac{1}{2}$	
Third ditto, from a model	$\frac{1}{2}$	
Plan to illustrate defilade	1	2
Drawing of a military building	1	
Memoirs, &c.:		
On defilade	$\frac{1}{2}$	2
On profiling	$\frac{1}{2}$	
On a field work	$\frac{1}{2}$	
On the building drawn	1	

The relative value of those subjects for which marks are assigned by the professors of the school, namely, drawings, memoirs, and notes of lectures, is represented by 22 out of 60, or rather more than one-third of the total sum. The marks for the various kinds of drawing by themselves amount to one-fourth of the whole number of marks given. Drill, fencing, and riding, together count a little more than one-ninth; conduct marks have only a value of one-thirtieth of the total.

Conditions required in order to pass the first year's examination.

In order to pass out of the junior into the senior division the following marks must be obtained as a minimum:

(1.) In the general result, comprising the marks given both for the examinations and for the work executed during the year, an aggregate of half the maximum number of marks—this maximum being 1,200.

(2.) In the result of the *vivâ voce* examinations before the jury a general mean of eight out of 20, or two-fifths of the maximum.

(3.) A certain minimum in each individual subject, viz., in astronomy and descriptive geometry three-tenths; in each of the other branches of theoretical instruction one-fifth; in topographical drawing two-fifths; and in the drawing connected with each of the other courses three-tenths of the maximum.

A further trial allowed to

If a student fails to obtain the above minima, he is subjected

to a fresh examination in the subjects in which he has failed before the *comité consultatif d'état-major*. If the trial is favorable to him, he is allowed to pass into the senior division at the bottom of the list. If the trial is not favorable, he is sent back to his regiment. It is only in the case of illness of at least 45 days duration that a student is allowed to remain a second year in the junior division. Dismissals from the school on account of failure in the first year's examination are not very frequent, but sometimes two or three occur in a year.

those who fail to pass.

A second failure entails dismissal from the school.

The examination of the junior division terminates about the middle of December, and the students are then allowed a short vacation until the 7th January, when they return to commence their studies in the senior division.

Vacation allowed to the junior division after the examination.

In the second year the students, in addition to the June examination, are subjected to a double examination at the end of the year. The lectures for the senior division terminate about the 15th of October, and shortly afterwards the preliminary examination takes place before the jury composed of officials of the school. It is confined to the subjects taught during the year, and does not include the first year's studies. It is conducted similarly to the examination at the end of the first year, and lasts about a month. On its conclusion the Council of Instruction draw up a provisional list of the students in the order of merit as determined by the marks gained in the examination and during the year.

Two examinations for the senior division at the end of the second year.

The first, a preliminary examination, before the board of officers of the school.

On which a provisional classification of the students is founded.

The "co-efficients of influence" for the second year are as follows:—

Relative importance of the subjects in the second year.

Geography and statistics.	Examination	4	5
	Memoir	1	
Geodesy and Topography.	Examination	4	10
	Drawing	6	
Artillery	Examination	4	7
	Drawings	2	
	Memoirs	1	
Fortification.	Examination	4	9
	Drawings	2	
	Memoirs: On a fortress	2	
	Memoirs: On the project for field works	1	
Administration.	Examination	4	5
	Memoirs	1	
Military art	Examination	4	7
	Memoirs and reports	3	
Drill			3
German			4
Landscape drawing			2
Notes taken at lectures			1
Conduct and discipline			2
Riding			3
Veterinary science			1
Fencing			1
Total			60

SUB-DIVISION of the CO-EFFICIENTS for DRAWING, &c.:

Survey with the compass	1½	6
Rapid field sketch	1½	
Road reports and reconnaissances	1	
Drawing from models	1½	
Reduction of surveys	½	
First drawing of military bridges	¾	2
Second ditto	¾	
Plan of breaching battery	½	
Drawing of artillery carriages	1	
Project for field works	1	2
Drawing of a fortress	¾	
Reconnaissance of the approaches to a work	¼	
Précis of a campaign and battle	1	3
Report accompanying the field-sketch	1	
Staff officers' reports	½	
Reconnaissance reports	½	

In this year's classification the proportion between the marks given by the professors and those dependent on the examination is the same as in the first year. Drawing, however, this year only counts as one-fifth of the total. Drill fencing, riding, and conduct have the same relative value as in the first year.

The second or final examination takes place before the *Comité consultatif d'état major.*

The final examination of the senior division commences about the 1st of December and occupies nearly three weeks. The only difference between it and the preliminary examination passed a month previously is, that it takes place in the presence of a board independent of the school, the *comité consultatif d'état-major*, instead of before the jury composed of members of the school. In every other respect it is conducted in exactly the same manner. It embraces the same subjects, and even the same series of questions are employed. The professors of the school put the questions to the candidates and propose the marks to be given for the answers, which are then discussed and decided upon by the board. The board also have placed before them the classification of the students made at the end of the first year, the classification resulting from the recent preliminary examination, and all the drawings, reports, and other work executed by the students since their admission to the school. These they examine and compare with the marks which have been awarded to them by the professors, and they have the power, if it should be thought necessary, to alter the professors' marks. On the conclusion of the examination the *comité consultatif* draw up a final list of the students arranged in order of merit. In determining this list, half of the marks gained in the examination at the end of the first year, as well as in the preliminary examination of the second year, are added to those assigned by the *comité.* The relative importance of the various examinations is, therefore, as follows :—

After which a final list of the students in order of merit is drawn up.

Influence of the various examinations on the final classification.

The first year's examination counts one-fourth towards the final result.

The second year's preliminary examination counts one-fourth towards the final result.

The final examination before the *comité* counts one-half towards the final result.

Influence exercised by the school authorities.

It will thus be seen that the examination before the *comité* is the most important, and affords a check upon the authorities of the school. The latter however, still have considerable influence on the final result. There being no examination in practical drill, fencing, or riding in the presence of the *comité*, the marks for these subjects are entirely depen-

dent on the instructors. The only marks actually awarded by the professors are those for the drawings and memoirs executed during the course, and for notes taken at lectures; and these marks, as has been seen, are subjected to revision; but the professors exercise considerable influence over all the examinations, as they put the questions to the students and propose the marks to be given. The jury, which in two out of the three principal examinations definitely assigns these marks, and the board by whom the marks for conduct are decided, are both composed exclusively of officers of the school.

Conditions required in order to pass the final examination. Those who fail are not eligible for the Staff Corps.

In order to pass the final examination a student must obtain a general mean of half marks in the *vivâ voce* examination, and a total aggregate of three-fifths of the maximum in the general result. Any one who fails to come up to this standard is inadmissible to the Staff Corps. This rule is strictly adhered to, and no exception is made unless in the case of illness, when a student may be permitted to pass a second year in the senior division. In no case, however, is any one permitted to remain more than three years at the school. Failures at the final examination are said very rarely to occur.

Those who pass join the corps as lieutenants.

On passing the examination the students are at once posted to the Staff Corps with the rank of first lieutenant,* their seniority being determined by the order of merit in which they stand in the final classification.

Character of the Polytechnic students at the Staff School.

The students from the Polytechnic do not, as a rule, at the Staff School show any superiority over those from St. Cyr. They are, in fact, said to be frequently found inferior in many of the practical portions of the course; and instances have occurred in which some who had held very high places in the final examination at the Polytechnic have passed out of the Staff School almost at the bottom of the list.

The competition at the school is not very great.

No prizes or rewards for diligence or ability are offered to the students, and there does not appear to be any very keen competition at the school: a high place on the list, though regarded as an honorable distinction, is not followed by any very practical advantages, and appears to be little taken into consideration in promotions made by selection. It seems in fact to be thought by some that there is too little stimulus to competition, and that it would be an improvement to in-

* Under the altered system, introduced in July 1869, this will no longer be the case with all the officers who pass through the Staff School. A larger number will be admitted to the School, and only a certain number of those who are highest on the list at the final examination will be placed on the permanent establishment of the Staff Corps. *See* Appendix, page 520.

crease the number of pupils at the school, admitting only a certain number of the best to the Staff Corps, instead of making an appointment a certainty in the case of all who come up to the required standard.*

Subsequent Employment.

After leaving the school the officers are attached to the various arms for five years.

Though members of the Staff Corps immediately on leaving the school, the officers do not at once join the corps, but are sent to do duty for two years with cavalry, two years with infantry, and one year with artillery. After five years spent in this manner, when the average age of the officers is fully 27, and when in most cases they have attained the rank of captain, they are eligible for staff appointments, and are either employed on the staff of military districts or are sent to the *Depôt de la Guerre*. The latter post is generally most sought after, both because it brings the officers to Paris, and because it offers more chances of employment on missions to foreign countries and other special duties. Formerly two of the lieutenants on quitting the Staff School were at once sent to the *Depôt de la Guerre* to be employed on the national survey, but this is no longer the case. No officer is now sent to this department until he has done duty for five years with the various arms, and has attained the rank of captain. Every officer of the Staff Corps after having completed the regulated period of service with the three arms is certain of constant employment on the staff. The *Depôt de la Guerre* furnishes occupation for those who are not employed in military districts.

After which they obtain staff appointments or are employed in the Depôt de la Guerre.

Work required every year from the officers of the Staff Corps.

All officers of the Staff Corps below the rank of major, whether doing duty with regiments or employed on the staff, are required each year to send in a certain number of topographical drawings accompanied by military reports of the country surveyed. The subjects are assigned by the chief of the staff of the district. Inspecting generals when making their inspections are also directed to require the same officers to execute rapid reconnaissance sketches of military positions and roads (accompanied by reports), never allowing more than 48 hours for the completion of the work. All these drawing and reports are forwarded to the War Office, where they are examined and classified by the *comité consultatif d'état-major*, the best being honorably mentioned. Ability shown in these compositions is in theory supposed to have weight in determining an officer's claims for promotion, but practically it appears to have little influence on the selections made.

* This change has been made by the alterations recently introduced.

THE SCHOOL OF LA FLÈCHE.

(*Prytanée Impérial Militaire.*)

Abandonment of the system of juvenile military education in France.

The school of La Flèche is the only one now remaining of the numerous government establishments which at one time existed for the purposes of juvenile military education in France. The others have been gradually suppressed from a conviction of the disadvantages of commencing purely professional education at an early age; and the establishment at La Flèche, though maintained, is far from being an exclusively military school. It is mainly intended to give a gratuitous, or partially gratuitous education to the sons of officers and non-commissioned officers of the army and navy; and although the regulations of the school state that the principal object of this education is to fit the pupils for entering the army, and only exceptionally to prepare them for civil professions, yet in the instruction given to them there is nothing of a military character; the course of study is the same as that at the *Lycées*, the ordinary public schools of the country. The school occupies in France a position somewhat similar to that of the preparatory cadet schools in Prussia; but the organisation of the latter is more strictly military, and a much larger proportion of the pupils enter the army.

La Flèche not an exclusively military school.

The retention even of La Flèche is not universally approved.

The propriety of maintaining even this single juvenile school at the expense of the State, although not exclusively of a military character, has been frequently questioned; and its existence has, on more than one occasion, been seriously threatened. Its results do not seem to have been altogether satisfactory, and the frequent recurrence of disturbances and insubordination among the pupils has led to numerous inquiries into the working of the school. In the year 1859 a serious outbreak among the pupils nearly led to its entire suppression; and though this extreme measure was not adopted, important changes were introduced in the organisation and discipline of the establishment. It is worthy of remark that all the modifications which have at various times been made in the system of the school, with the view of improving the discipline, have been directed towards *diminishing* its military character; in each change that has been made the civil element in the management of the school has been strengthened and increased; and not only the course of instruction, but the system of discipline has been by degrees more and more assimilated to that of the ordinary civil schools of the country. From having been originally a purely preparatory school for St. Cyr, it has now become a place of general education fitting its pupils for any profession they may choose to enter.

Disturbances at the school have been of frequent occurrence.

Successive modifications of the organization of the establishment tending to assimilate it to that of civil schools.

Important changes introduced in 1859.

The object of the changes introduced in 1859 cannot be better shown than by quoting the Report made to the Emperor by Marshal Randon, the Minister of War at that time, in proposing the scheme for the re-organisation of the school. The Report is as follows:—

"SIRE, "Paris, 8th November 1859.

Report of Marshal Randon to the Emperor.

"I HAVE on several occasions called the attention of your Majesty to the disturbances which occurred at the *Prytanée Impérial Militaire* in the month of March last. The serious character and the frequent recurrence of these disturbances had suggested to your Majesty the idea of suppressing the establishment; but from a conviction of the hardships which would be entailed upon the families of the pupils by such a measure, your Majesty has thought fit to consent to a further attempt being made to preserve an institution, the object of which is to confer upon the army advantages of the highest importance.

"I have endeavoured to introduce into the organisation of the Prytanée modifications which, while preserving its military character, will bring its system more into harmony with the spirit of moral influence by which the discipline of civil schools (*établissements universitaires*) is regulated.

Appointment of a civilian Inspector of Studies.

"With this object in view, I propose to your Majesty to associate with the military Commandant of the Prytanée a member of the university with the title of 'Inspector of Studies,' who being placed under the immediate orders of the commandant will represent the interests of the professorial staff, while at the same time he will act as a medium between the authority of the commandant and the members of this staff.

Modifications in the military *régime*.

"The modifications to be introduced into the organisation of the establishment, the details of which will be defined in a code of regulations for the interior economy of the school, will bear more particularly upon the following points:—

"The older pupils, forming the first battalion, will alone be subject to military discipline. The younger pupils, forming the second and third battalions, will be subject to a discipline similar to that of civil schools (*établissements universitaires*).

Assimilation of the course of instruction to that at the Lycées.

"The instruction given to all will be in accordance with the course of study at the *Lycées* (section of sciences). The system of discipline will be made less severe in the case of the younger pupils, who are at present subjected, equally with the oldest, to the rigid rule of a purely military discipline. The newly admitted pupils will be separated from those already at the school, who are still too much imbued with the bad spirit which for many years has exercised such an unfortunate influence over the establishment.

"The outbreak in the month of March last, has led to a strict enquiry conducted under the direction of a general officer. Ninety pupils have been dismissed from the Prytanée. I have the honor to recommend your Majesty to enforce this dismissal. The pupils must clearly understand that such a measure is intended to be a real punishment, and not a mere threat, resulting, sooner or later, in the condonement of the offence, and having no more serious consequences than that of rustication for a few months.

"The internal discipline of the Prytanée will form the subject of special regulations; the instruction will be conducted in accordance with the plan of studies drawn up for the *Lycées*. I do not consider it necessary for the future to retain side by side with the Commandant a Council of Discipline and a Council of Instruction. These Councils only appear to me likely to furnish an excuse for dissensions, and a support to opposition."

The present organisation of the school is founded upon the recommendations contained in the above report; it is partly of a military and partly of a civil character.

Objects of the institution to give State assistance in the education of the sons of military men.

The institution is intended for the education of boys between the ages of 10 and 19. Four hundred pupils are educated at the cost of the State; for 300 of this number the education is entirely gratuitous, for the remainder it is partially so. Pupils not entitled to State support are also admitted to the school on payment of 850 francs (34*l.*) yearly, and the children of residents in La Flèche are received as day-boarders on payment of five francs a month.

Conditions on which this assistance is granted.

The free and partially free places (*bourses* and *demi-bourses*) are reserved exclusively for the sons of officers who are still serving or have served in the army, and of non-commissioned officers who have been killed in action. In assigning them preference is given,

1. To those who are orphans on both sides.
2. To those whose fathers have been killed on service, or have died of wounds received in action.
3. To those whose fathers have died in the service, or after having retired on a pension.
4. To those whose fathers have been disabled by wounds received in action.

Admission to the school.

There is no competitive examination for entrance to the school; the admission of candidates is determined solely by their claims, but they undergo an examination to prove their fitness for the class in the school which corresponds to their age. The school year commences on the 1st of October.

Candidates for admission as *boursiers* or *demi-boursiers* must be between the ages of 10 and 12 at this date; those who do not claim State support may be admitted up to the age of 14. No pupil is allowed to remain at the establishment beyond the end of the school year in which he reaches the age of 19.

Establishment.

The military staff consists of:—

A brigadier general as Commandant.

A field officer of infantry as Second Commandant.

One captain and four lieutenants of infantry to superintend the drill and gymnastic exercises.

The staff connected with the instruction of the pupils is entirely composed of civilians, and consists of:—

An Inspector of Studies.

An assistant Inspector of Studies.

Eight professors of classics and grammar.

Two professors of geography and history.

Two professors of special mathematics, physics, and chemistry.

One professor of natural history.

Three professors of mathematics.

One professor of German.

Three professors of drawing.

One master of writing and arithmetic.

Twenty-five *répétiteurs* and assistant masters.

There are also a treasurer, two chaplains, and a surgeon.

Duties of the Inspector of Studies.

The duties of the Inspector of Studies are to afford to the Commandant the assistance and experience of a person acquainted with civil education; the appointment is held by a member of the university, who is recommended for it by the Minister of Public Instruction. All the professors and instructors are recommended by the same Minister, and must be selected from among graduates of the university. The Councils of Instruction and Discipline were abolished in accordance with Marshal Randon's recommendations in 1859, but the financial affairs of the school are still managed by a Council of Administration.

The course of instruction similar to that at the Lycées.

The instruction given at the school is founded upon the course of study at the *Lycées*. The organization of all the *Lycées* of France is uniform, being determined by the government. In 1859, at the time the school of La Flèche was re-organized, the arrangement adopted in regard to the course of study at the *Lycées* was as follows:—Each school had two divisions, the upper and the lower; in the lower division, consisting of the younger pupils, the course of study was the same for all; the upper division, into which the pupils passed about the age of 14, consisted of two sections or departments,

in each of which a different course of study was followed. In one section, the scientific, the studies were chiefly mathematical, and were intended to be specially preparatory to the degree of Bachelor of Sciences; in the other, or literary section, the studies were more of a classical and literary character and were preparatory to the degree of Bachelor of Arts. The pupils, on passing into the upper division of the school, had the option of entering either the scientific or the literary section, according as their object was to qualify themselves for one or other of the above degrees.*

With certain modifications.

At La Flèche there are similarly two divisions, but in the upper division there is only one section, the course of study in which is nearly similar to that in the scientific section of the *Lycées*, although apparently not quite so exclusively mathematical. Facilities are still afforded to the pupils for classical and literary instruction, so that those who wish to do so may also qualify themselves for the degree of Bachelor of Arts on leaving the school.

The subjects of study are entirely of a general character.

The subjects taught at the school comprise—writing, arithmetic, grammar, and other elementary instruction for the lower classes; Latin, Greek, mathematics, history, geography, physical science, natural history, German and drawing. Religious instruction is also given.

The military organization is only partial.

It will be seen that there is nothing military in the course of study, but the pupils are drilled, and learn gymnastics and swimming. They wear uniform, and are formed into three divisions or battalions, of which, however, the first only, consisting of the older pupils, is subject to military discipline.

Annual inspections of the school, both civil and military.

The school is inspected yearly by a general officer appointed by the Minister of War, and by an officer of the *intendance;* in addition to these military inspections two civilian inspectors, members of the university, visit the school yearly for the purpose of reporting upon the system of instruction, the progress of the studies, and the general moral tone of the establishment. Their report is forwarded both to the Minister of War and to the Minister of Public Instruction.

Proportion of pupils who enter the army.

As already stated, the pupils are under no obligation to enter the military service, and no particular inducement is held out to them to do so. They must, like young men educated at any civil establishment, pass through the ordinary

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* This arrangement of the course of instruction at the *Lycées*—the system of "bifurcation," as it is popularly called—has been since abolished, although the course at La Flèche appears to be still in principle founded upon it. A brief account of the sys em of instruction now in force at the *Lycées* will be found in the Appendix, page 585.

course of instruction at one of the special schools before they can obtain commissions. A certain number of them compete yearly for admission to St. Cyr and the Polytechnic. Preously to 1859 considerable advantage was allowed to those pupils of La Flèche who were sons of military men in competing for admission to St. Cyr: they had the privilege of being raised 15 places above that which they actually gained by their marks in the examination. The doubtful advantages of this privilege to the pupils themselves, and its injustice to other candidates, led to its abolition on the reorganization of the school in 1859. Pupils from La Flèche are now upon the same footing as those educated at any other school in regard to the competition for admission to St. Cyr. The average number admitted to the latter school yearly from La Flèche appears to be about 15; the number of those who enter the Polytechnic is very much smaller. In the year 1866 the Prytanée sent 19 pupils to St. Cyr, and five to the Polytechnic, but these numbers are apparently above the average. It is stated that out of 4,032 pupils educated at La Flèche, between 1814 and 1866, 1,667 were admitted to St. Cyr, 46 to the Polytechnic, and 12 to the navy, so that nearly two-thirds of the pupils would appear to have entered civil professions.

GENERAL REMARKS ON FRENCH MILITARY EDUCATION.

Proportion of professionally educated Officers in the French army.

1. The general features of the educational qualifications of the officers of the French army are summarised by the Commissioners of 1856 as follows:—"The French army "combines a considerable proportion of officers professionally "educated, with others, who form the majority, whose claims "to promotion consist in their service, proved ability, and "conduct. One-third of the officers in the line, two-thirds "of those in the scientific corps, and the whole of the staff, "receive a careful professional education; the remainder are "taken, upon the recommendation of their superior officers, "from the ranks." At the present time the proportion of professionally educated officers in the line is probably somewhat greater than one-third.

Preparatory education for the line;

for the scientific corps.

2. The professional education for commissions in the line is given by a two years' course at St. Cyr, admission to the school being dependent on competitive examination. Admission to the Artillery and Engineers is obtained through the Polytechnic, where young men intended for commissions in those arms receive a preparatory education of a highly

scientific character, in common with candidates for many other branches of the public service. Admission to the school is obtained by competition, and the choice of services is dependent on the results of another competive examination at the end of the two years' course. Commissions are then obtained in the respective corps, and the young officers go for a further period of two years to the School of Application at Metz, there to receive their strictly professional instruction. The course of teaching at Metz is still mainly of a theoretical character, and the main portion of the practical training of the officers is deferred until they join their regiments. The Staff Corps is recruited entirely from the Staff School; a very small number of pupils from the Polytechnic have a claim to admission to the school, but the great majority of the students are admitted by competitive examination, open nominally to the sub-lieutenants of the army and to the best students of St. Cyr, but in practice almost entirely confined to the latter. The students join the school with commissions as officers; at the end of the two years' course they are definitely appointed to the Staff Corps in the order in which they stand in a competitive examination, but before being employed upon the staff they are sent to do duty for five years with the various arms.*

for the Staff Corps.

3. The military schools in France are not, as in this country and in Prussia, placed under the control of a special department. They are all under the immediate management of the Minister of War. There is, however, for each branch of the service in the French army a consulting committee (*comité consultatif*), or board of general officers, attached to the War Department, for the purpose of giving advice to the Minister, and in matters affecting the individual schools the Minister generally consults the *comité consultatif* of that branch of the service for which the school is specially preparatory.

No central educational department in France.

4. Each school has its own *conseil d'instruction*, composed of officers and professors of the establishment, which exercises a general supervision over the course of instruction, and has the power of suggesting alterations or improvements in it. The financial business of the school is managed by another board (*conseil d'administration*); and there is generally also a similar board (*conseil de discipline*), which exercises more or less authority in questions of discipline. The effect of this

Councils for the internal administration of the various schools.

* The arrangements for admission to the Staff Corps will in future be somewhat modified by the new regulations introduced in July 1869, to which allusion has already been made in the notes to the account of the Staff School. *See* Appendix, page 520.

arrangement is to give the various officers and professors of each school to some extent a voice in the general management of the institution.

Proportion of officers and instructors to students.

5. The staff of officers and instructors employed appears, in most cases, very large in proportion to the number of the students. The actual proportions at the various schools are as follows:—

Name of School.	Military Staff.	Staff specially connected with Instruction.	Total Staff.	Average number of Students.
Polytechnic - -	8	40	48	270
Artillery and Engineer School at Metz.	13	20	33	160 to 180
St. Cyr - - -	27	35	62	600
Staff School - -	6	16	22	50
Prytanée Impérial at La Flèche.	7	48	52	400

The above numbers represent merely the officials engaged in the actual superintendence and instruction of the pupils; neither the medical nor the administrative staff (the latter comprising paymasters, quartermasters, librarians, &c.) of the various institutions are included.

The distinction between the duties of the military and professional staff less marked than at English schools.

Though there is in all the schools a military staff separate from the staff of professors and instructors, and more especially charged with the maintenance of discipline, the line of separation between the two bodies is not, except at the Polytechnic, so distinctly drawn as in the English military schools. The military professors exercise disciplinary powers; while, on the other hand, the members of the strictly military staff in almost all cases take some part in instruction. The latter appear to be more utilised for this purpose than is the case either at Sandhurst or Woolwich.

Care bestowed on the selection of professors.

6. Considerable care is exercised in the appointment of professors; at the Polytechnic the candidates are selected by the *Conseil de Perfectionnement;* at La Flèche they are recommended to the Minister of War by the Minister of Public Instruction; at the Staff School and St. Cyr the appointments are thrown open to competition. Special qualifications do not, as a rule, appear to be so much taken into consideration in the appointment of the members of the military staff. There is in general no fixed limit to the tenure of any of the appointments.

Strict military discipline enforced at all the schools.

7. The discipline maintained at all the schools is of a very strict nature; except for the youngest pupils at La Flèche it is entirely military; the punishments are similar to those

inflicted in the army, and even include imprisonment. The maintenance of discipline is considerably facilitated by the fact that the pupils at most of the schools are actually subject to military law; and those of St. Cyr, if dismissed from the school, are sent into the ranks as private soldiers. There appears, however, in all the schools to be an absence of the moral control over the young men which is exercised in the Prussian schools. The Commandant of each school has very extensive powers in regard to discipline, but in no case has he authority to dismiss a student from the school without the sanction of the Minister of War.

Special military education is not begun at an early age in France.

8. The principle carried out in France is that special military education should not be begun until a comparatively late age, and should be founded upon a groundwork of good general education in civil schools. The only approach to a junior military school in France is that of La Flèche, and this is mainly a charitable institution; the pupils, it is true, learn drill, but beyond this no special military instruction is given them. The course of study is the same as that at the *Lycées* or ordinary civil schools, and the pupils are under no obligation to enter the military service. Nor can the Polytechnic be called an exclusively military school; even those who enter the Artillery and Engineers from it have their education in common with civilians at the very least until the age of 18, and in the great majority of cases their strictly professional instruction at Metz does not begin till 20 or 21. The very earliest age at which a special military education commences in France is 17, which is the age of admission to St Cyr, and comparatively few enter the school before 18 or 19. The knowledge required for admission to St. Cyr is entirely such as is acquired at civil schools, and so much importance is attached to a good general education that the degree of either *bachelier ès sciences* or *bachelier ès lettres* is made a necessary qualification for admission to the examination, while the possession of both degrees gives considerable advantage to a candidate. The principle of deferring the commencement of special instruction has even received extension since 1856; the age of admission to St. Cyr, which was then 16, has been now increased to 17, and the junior school of La Flèche has been made even less military in its character than it was at that time.

But when commenced is, in general, of a strictly professional character.

9. When a professional education has once commenced, the principle appears to be that it should be almost entirely confined to subjects which have a practical bearing on military duties. Mathematics, as a subject by themselves, do not form part of the ordinary course of instruction at any of

the special schools. The previous course at the Polytechnic secures of course very high mathematical attainments in the candidates for the Artillery and Engineers who enter Metz; but at Metz itself the study of mathematics is no longer continued. In the same way at the Staff School a knowledge of mathematics as far as trigonometry is required for admission, and their practical applications to operations of surveying enter into the school course; but no part of the time spent at the school is devoted to mere theoretical instruction in pure mathematics; yet the officers of the Staff Corps are entrusted with the execution of those scientific surveys which in our service are in the hands of the Engineers.

Exceptional circumstances at St. Cyr.

St. Cyr offers to some extent an exception to the rule that the course of study at the special schools should be of an exclusively professional character, as the instruction given there during the first year is partly of a general nature, embracing history and literature. This, however, arises from the fact that the students from the *Lycées* generally show a deficiency in the more literary subjects of a liberal education, and a portion of the time at the school is therefore spent in completing and improving their general acquirements. A knowledge of arithmetic, algebra, and plane trigonometry is required as a qualification for admission, but beyond a very brief revision of these subjects, and a voluntary course for candidates for the Staff Corps, mathematics are not taught at the school. It would seem indeed that, except in the case of candidates for admission to the Artillery and Engineers, mathematics do not hold so prominent a position in French military education as is generally supposed in England to be the case. For staff and regimental officers the main requisite demanded seems to be a practical knowledge of trigonometry as required for surveying.

Mathematics not now made an all important element in military education.

Importance attached to drawing.

10. Much time is devoted in all the French schools to drawing in its various branches; some hours daily are invariably given up to the subject; indeed the time spent upon purely geometrical drawing appears almost to be excessive. The great importance attached to the drawing of *machinery* is a peculiar feature in all the schools. Landscape drawing is one of the regular subjects taught to candidates both for the line and the Staff Corps.

Practical exemplification of the subjects of instruction by visits to military establishments, &c.

The theoretical instruction given at every school is supplemented by visits to numerous military establishments, manufacturing departments, and fortresses. This is also a feature in the system of military education in Prussia; in both countries it seems to be thought desirable to afford

young officers a practical insight into the working of the various establishments connected with the army. In the case of officers of the Artillery and Engineers it appears in France to be made a special object to cultivate a mechanical genius, and to secure a thorough acquaintance with the manufacturing departments with which their professional duties bring them into contact.

Instruction in military law, regulations, &c. and in drill.

Military law and administration (comprising financial and other regulations connected with the army), and drill, riding, and fencing in the way of practical exercises, form part of the education of officers of all branches of the service; in drill, lectures explanatory of the drill-book are invariably given in addition to the practical instruction.

The system of instruction at all the schools is formed on the model of the Polytechnic.

Competition its leading feature.

11. The system of instruction in all the French military schools is more or less that of the Polytechnic. Lectures attended by large numbers, enforced study of fixed subjects, the execution of all work under close supervision of the instructors, and frequent periodical examinations, are everywhere found. Active competition is the leading feature of the system; the students are perpetually being "kept up to the mark." A fixed period of two years is in all cases assigned to the course of study; the course cannot be completed in a shorter time, and the regulated period cannot (unless under quite exceptional circumstances) be exceeded.

It seems also to be thought that, as a necessary consequence of the strictly competitive system, the subjects upon which the competition depends should be exactly the same for every student. No choice of studies is allowed; those which enter into the examination are equally obligatory for all. The only exception to this rule is at St. Cyr, where in languages a choice between German and English is given.

No pecuniary rewards are offered to the students at any of the schools. The bestowal of the numerous *bourses* which are granted to those admitted to the Polytechnic and St. Cyr is regulated entirely by the poverty of the candidates, without any regard to their ability.

Contrast between the French and Prussian system of military education.

12. The education of officers in France is entirely concluded before any regimental duty has been done. The French system is in this respect the exact opposite of that pursued in Prussia, where no professional instruction, as a rule, is given until a certain amount of service with the troops has been performed. There are in France no establishments for the instruction of officers of some years' service, like the Staff College in this country, or the Artillery and Engineer School and the War Academy in Prussia.

Changes at the French military schools since 1856.

13. The chief changes which have taken place in the military schools of France since the publication of the Report of the Commissioners of 1856 may be summarised as follows:—

The Polytechnic.

(*a.*) The modifications in the course of instruction at the Polytechnic; the abridgment of the studies previously pursued; and the slightly increased importance now attached to literary subjects.

Metz.

(*b.*) At Metz, the introduction of an examination at the end of the first year's course of study.

St. Cyr.

(*c.*) At St. Cyr, the alteration of the age for admission to the school from 16 to 17; the extension of the subjects of the entrance examination; the modifications in the course of instruction, and the postponement of the commencement of strictly military studies almost entirely until the second year; the introduction of a stricter system of discipline, combined with additional encouragements to good conduct and industry; and the increased advantages offered with the view of attracting to the school a higher class of professors and officers.

La Flèche.

(*d.*) At La Flèche, the complete reorganization of the institution with the object of more closely assimilating its general arrangements to those of a purely civil school.

The Staff School.

(*e.*) At the Staff School some modifications in the course of study and in the mode of admission to the school have been made; but the most important alterations are those adopted in July 1869, by which the number of students admitted annually to the school is increased considerably beyond the number of vacancies likely to occur in the Staff Corps, and the novel principle is introduced that admission to the school does not carry with it the certainty of permanent employment on the staff.

It may be added that there seems a tendency to diminish the importance of mathematics as an element of preparatory military education, and to attach slightly more weight to studies of a literary character. This is more particularly seen at St. Cyr and at La Flèche, and to a less extent at the Polytechnic. There also appears to be a growing disposition to increase, in the case of the cavalry and infantry, the proportion of officers who have received a professional education.

Authorities.

Considerable historical information regarding all the military schools of France is contained in a work published by M. de Montzey in 1867, with the title "Institutions d'éducation militaire depuis 1789." Lists of works consulted.

The decrees and regulations consulted with reference to the existing organisation of the individual schools are as follows:—

I. For the Polytechnic: The Polytechnic.

Décret Impérial du 30 Novembre 1863, portant réorganisation de l'Ecole Polytechnique.

There is a later decree of the 1st November 1865, but the changes made by it relate only to a few matters of detail.

Règlement sur le service intérieur—containing an account of the discipline, the duties of the various officials, &c.

Programmes de l'enseignement intérieur (1866).

Programme des connaissances exigées pour l'admission—published annually in the Journal Militaire Officiel.

The more general works connected with the Polytechnic are enumerated at length in the Report of the Commissioners of 1856.

II. For the School of Application at Metz: Metz.

Décret Impérial du 14 Août 1867, portant nouvelle organisation de l'Ecole Impériale d'Application de l'Artillerie et du Génie.

Règlement de Police (Novembre 1862).

Règlement concernant le service des officiers d'état-major, (1854).

Règlement d'administration (1864).

Règlement relatif aux officiers de l'artillerie et du génie, provenant des sous-officiers, qui demandent à suivir les cours de l'Ecole Impériale d'Application de Metz (1854).

Règlement sur l'évaluation des travaux—which gives an account of the system of marks in use at the school.

Tableaux de l'instruction pratique militaire donnée aux élèves des deux armes pendant les deux années d'étude.

Programmes of the courses of study in the various subjects.

St. Cyr.

III. For the school of St. Cyr:

Décret Impérial relatif aux modifications apportées à l'organisation de l'Ecole Impériale Spéciale Militaire, (8th June 1861).

Instruction pour l'admission à l'Ecole Impériale Spéciale Militaire en 1868—giving the conditions of admission to the school and the subjects of the entrance examination. Similar instructions are published each year in the Journal Militaire Officiel.

Instructions et consignes de la direction des études.

Instruction sur le service intérieur de l'école concernant les élèves—giving the detailed regulations with regard to discipline.

Règlement portant instruction pour les examens de passage en première division et les examens de sortie de l'Ecole Impériale Spéciale Militaire—(23rd July 1861), which contains the regulations for the mode of conducting the examinations at the school.

Programmes of the course of instruction.

The Staff School.

IV. For the Staff School:

All the decrees and regulations connected with this establishment are contained in a small volume published by Dumaine in Paris (Librairie Militaire, 30, Rue Dauphine), entitled "Manuel Règlementaire à l'usage des Officiers-élèves de l'Ecole Impériale d'Application d'état-major." The latest edition is that of 1864, but few changes in the regulations have taken place since that date.

La Flèche.

V. For the school of La Flèche:

Décret Impérial portant réorganisation du Prytanée Impérial Militaire (8th November 1859).

All the regulations and other documents required were supplied with the greatest courtesy by the authorities of the various schools visited.

MILITARY EDUCATION IN PRUSSIA.

Introductory Remarks.*

The military system of Prussia.

The mode of officering the Prussian army, and the educational requirements demanded from candidates for commissions, are so intimately connected with the general military system of the country, that a brief outline of the latter is a necessary preliminary to an account of the system of military education. Universal liability to service (*allgemeine Wehrpflicht*) has, as is well known, long been the basis of the military organization of Prussia, which has now been extended to all the states composing the North German Confederation.

Divisions of the military forces.

The military force of the Confederation consists of three distinct bodies, viz.:—

I. The standing army, which is divided into the Active Army and the Reserve.
II. The Landwehr.
III. The Landsturm.

The standing army; divided into

Every citizen of the Confederation, in the year in which he completes his 20th year of age, becomes liable to military service for a period of seven years in the standing army. For the first three years of this period he belongs to the *active* army, and serves continuously with the troops; on the completion of this period of active service he is discharged on furlough, and belongs for the remaining four years to the Reserve—a body which in time of peace performs no regular military duty. It can, however, be called out to take part in the annual manœuvres of the army; and every member of the force is liable to be called up for two periods of exercise, each limited to a maximum duration of eight weeks, with the regular troops, during the four years for which he continues to belong to it. On the mobilisation of the army in preparation for war the Reserve are at once recalled to the ranks.

the active army,

and the Reserve.

The Landwehr.

Those who have completed their seven years' term of service in the standing army are transferred to the Landwehr, in which they serve for a further period of five years, from the age of 27 to 32. During this period of service the

* The general outline of the Prussian military system is almost entirely derived from information supplied by the kindness of Colonel Walker.

infantry, artillery, and train of the Landwehr are liable, in time of peace, to be called out twice, for about a fortnight on each occasion, for service with the divisions of the active army to which they are attached. Cavalry no longer forms an element in the organization of the Landwehr, an increased force of that arm in the standing army having quite recently been substituted for the Landwehr cavalry of former days. In time of war the Landwehr is organized in special corps by itself, distinct from those of the standing army, and is liable to be sent on foreign service. The distinction which formerly existed between the Landwehr of the first and of the second ban (*Aufgebot*) is now abolished, the whole force being placed upon the same footing.

The Landsturm.

The Landsturm, or last reserve, consists of the whole able-bodied male population, between the ages of 17 and 42, who do not belong to the standing army, Landwehr, or navy. The force can only be called out in the event of the actual invasion of the country by an enemy.

Periods of service in each force.

The periods of service, therefore, in the various branches of the military force of the Confederation are at present as follows :—

In the Active Army,	3	years,	between the ages of	20	and	23
„ Reserve	4	„	„	23	„	27
„ Landwehr	5	„	„	27	„	32

On the completion of his 32nd year every one is exempted from all further service except that in the Landsturm.

Strength of the active army.

The active army is the only portion of the force which is kept continuously under arms. Its strength bears a fixed proportion of one per cent. to the whole population of the country. The number of young men in the country between the ages of 20 and 23, even after deducting those who do not reach the required standard of height, or are otherwise physically unfit for service, is considerably more than sufficient to supply the yearly draughts of recruits required to keep the army at this strength. Various exceptional circumstances in individual cases are therefore sanctioned by law as grounds for exemption from serving in the army ; and the ordinary period of three years' active service can, in the case of the educated and wealthy classes, be shortened to one year. Young men who can give proof of good education, either by passing an examination or by producing certificates of having been for a certain period in the highest classes of one of the recognized public schools of the country (the *Gymnasien*, *Real-schulen*, and *Bürger-schulen*), are allowed to commute their three years' service in the active army to one, on condition of serving entirely at their own expense.

Exemptions from the ordinary period of service.

The one year volunteers.

They have to find their own clothing, food, and lodging, and in the cavalry have in addition to pay a certain sum for the use of their horse. The expense to the individual of serving in this manner as a one-year's volunteer (*einjähriger Freiwilliger*) appears to be on an average about 700 thalers (105*l.*), so that the privilege is only within the reach of the wealthier classes. Young men who serve on these conditions, on the completion of their year's service in the active army, pass for six years into the Reserve, and very frequently eventually become officers of the Landwehr. The object of this exception to the ordinary period of service appears to be partly to encourage the general education of the country (an object which is frequently apparent in many parts of the military system of Prussia), partly to diminish to some extent the interference with the avocations of civil life which is caused by the universal liability to military service. With a similar object young men are allowed to volunteer to perform their ordinary three years' service (*dreijähriger freiwilliger Militairdienst*) as early as the age of 17, in which case they can complete their period of active service by the end of their 20th year, and be then free to follow a civil profession. As an additional inducement, all volunteers are allowed to select the branch of the service which they wish to enter; whereas ordinary recruits have no choice in the matter, but are posted to the arm for which they are physically most qualified. It should be noticed that the liability to military service is in all cases *personal*, and that no substitutes are allowed; those only are exempt from service who are physically disqualified, or in whose peculiar circumstances exceptional grounds of exemption are recognized by law.

The three years volunteers.

Inducements given to volunteering.

In order to obviate to some extent the practical disadvantages arising from the shortness of the period of compulsory service in the active army, encouragement is given to men in the cavalry to enlist for four instead of three years, by holding out to them the prospective advantage of exemption from two years of the service in the Landwehr; and in all branches of the service advantages are offered to induce men at the end of their three years to re-engage as *Kapitulanten* for a further period, if they are likely to become non-commissioned officers.

Attempts to encourage engagements for longer service than the compulsory period.

Before the campaign of 1866 the active army of Prussia in time of peace amounted to about 210,000 men. The increase of territory gained by the results of that campaign led to a large augmentation of the army, in addition to which the forces of all the states composing the North German Confederation are now placed under the supreme military

Recent increase of the Prussian army;

command of the King of Prussia; they are all organizable, and, with one or two trifling exceptions, are also officered on the Prussian system.

Its present peace strength.

The peace strength of the forces of the Confederation is at the present time in round numbers 300,000 men, of which about 250,000 belong to the army of Prussia proper, and 50,000 to the forces of the other Confederate States. The whole force thus shows an increase of nearly 90,000 men on the strength of the Prussian army as it existed before the war; this increase of course represents a proportionate addition to the number of officers, which, as will be seen, materially affects at the present time the regulations regarding the educational requirements demanded from candidates for commissions. The number of officers in the whole army of the Confederation is at present about 12,600.

Organization of the army.

The forces of the Confederation are divided into army corps, of which there are in all 13, with an additional division consisting of the troops of Grand-ducal Hesse. One army corps is composed entirely of the Guard, the others are numbered from 1 to 12, the 12th corps consisting exclusively of the Saxon army. Each army corps forms a force complete in every arm, and capable of rapid expansion on the approach of war. The ordinary composition of an army corps in time of peace is as follows:—

Composition of an army corps.

Two divisions of infantry, each composed of two brigades; two brigades of cavalry, one attached to each of the infantry divisions; a brigade of artillery, a battalion of engineers, and a battalion of the train. An artillery brigade generally consists of two regiments, one of field and one of garrison artillery; a regiment of field artillery comprises one division (three batteries) of horse artillery, and three divisions (each of four batteries) of foot artillery, corresponding to field batteries in our service. An engineer battalion is composed of four companies—one of pioneers, two of sappers, and one of miners. The strength of an army corps (with the exception of that of the Guard which is more numerous) amounts, in time of peace, in round numbers to 20,000 men and 800 officers.

Local connexion of the army corps.

Each army corps corresponds to a certain portion of the territory of the North German Confederation, within which it is constantly kept quartered, and from which it draws its recruits. A close connexion between the standing army and the other forces is thus kept up. Every individual, as he completes his respective periods of service, passes into the Reserve or the Landwehr of the province where the army corps in which he has served is quartered. For every brigade of infantry in the various army corps of the active

army, there is a corresponding Landwehr regiment, which is composed of the inhabitants of a certain district, and which, when called out for drill, serves with the brigade of the active army to which it belongs.

Mode of officering the army.

The mode in which the army is officered is uniform in nearly all the States of the North German Confederation. A certain amount of independence is still left to the King of Saxony, and to the sovereigns of one or two of the minor States, in regard to the appointment of officers, but as a rule the Prussian system has been universally introduced. The main peculiarity of this system is that in all cases, with one single exception, a certain length of service in the ranks is an indispensable condition of obtaining a commission; and that proof of having received, firstly, a good general education, and, secondly, a certain amount of professional instruction is required from every one before appointment to the rank of officer. The only exception to the regulation by which all candidates for commissions are compelled to serve for a certain time in the ranks, is made in favour of a small number of young men who have passed through a course of instruction in the preparatory military schools which compose the Cadet Corps, and have obtained admission to the *highest* class—the *Selecta* as it is termed—of that institution. They are allowed the exceptional privilege of entering the army directly as officers, but their number only amounts to about 50 annually; all other candidates for commissions—including those who have been educated in the Cadet Corps, but have not passed into the highest class—are required to go through a certain period of probationary service in the ranks before obtaining their commissions.

Service in the ranks, and educational qualifications, the conditions of obtaining a commission.

The cadet schools, or preparatory military schools of the country, furnish about one-third of the officers of the army. Two-thirds of the candidates for commissions enter the service directly from civil life, without having had any preliminary military training. The course ordinarily pursued in the case of the latter is as follows:—

Candidates for commissions admitted to the army from civil life.

A young man anxious to become an officer obtains a nomination from the colonel of a regiment. This nomination admits him to serve in the regiment as a private, but with the recognition of his being a candidate for the rank of officer, and as such he is called an *Avantageur*. Before definitely obtaining his commission as an officer the following conditions must be fulfilled. He must serve at least six months as a private. He must pass an examination in the subjects of a liberal education, such as is given at the public schools of the country. He must attend a War School (*Kriegs-schule*),

and there go through a course of 10 months military instruction, at the close of which he must pass an examination in professional subjects, to test his fitness for the rank of officer. The *Avantageur* then returns to his regiment, and, as far as educational requirements go, he is qualified for a commission when a vacancy occurs. But before finally being recommended for one he has still to pass a further ordeal; he must be declared by the officers of his regiment to be worthy of admission among their number.

The two examinations for a commission.

On the first, or preliminary examination, which merely tests the general education of a candidate, depends his qualification for the rank of *Portepée-fähnrich*, or sword-knot ensign, a grade holding to some extent an intermediate position between the commissioned and non-commissioned ranks, but still ranking below the serjeant-major.* The first examination is accordingly called the *Portepée-fähnrich* examination. The second, or professional examination, ordinarily passed at the termination of a course of instruction at a War School, tests the candidate's fitness for the commission of second lieutenant, and is called the officer's examination.

Exemptions in certain cases from the preliminary examination.

The preliminary, or general examination, which corresponds nearly to the examination in our service for direct commissions, is dispensed with in the case of young men who have, on quitting a civil school, obtained a certificate qualifying them for admission to the university (*Abiturienten-zeugniss*); but the professional, or officer's examination, must in every case be passed before obtaining a commission.

Candidates for commissions admitted to the army from the Cadet Corps.

The course pursued in the case of young men who have been educated in the Cadet Corps, is somewhat different from that described for those who enter the army directly from civil life. The Cadet Corps comprises in all seven cadet schools—six junior establishments, situated in various provincial towns, and one senior or upper school at Berlin, to which the others are preparatory. All these schools are partly supported by the State; their main object is to give an education, more or less gratuitous, to the sons of officers in indigent circumstances; but they are also open to the sons

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* The ordinary gradation of ranks below that of officer in the Prussian army is:—

Feldwebel or Wachtmeister	Serjeant-major.
Portepée-fähnrich	Ensign.
Serjeant	Serjeant.
Unter-offizier	Corporal (nearly).
Gefreiter	Lance corporal.
Gemeiner	Private.

Above the rank of serjeant a distinctive silver sword-knot (*Portepée*) is worn, which gives rise to the name of *Portepée-fähnrich*, or sword-knot ensign.

of civilians. The organization of the schools is military; but, except in the two highest classes of the upper school at Berlin, the instruction is not of a professional character, and there is no obligation upon the cadets to enter the military service. Practically, however, the great majority of them go into the army. This they do in ordinary cases without passing through the two highest classes, or receiving any preparatory military instruction. They pass the same examination in subjects of general education as those who enter the army from civil schools, but they pass this examination before they leave the cadet school at Berlin; they are appointed to regiments by the King, and require no nomination from the colonel, but in all other respects they are on the same footing as the ordinary *Avantageur;* they must serve six months with the troops before they obtain the patent of *Portepée-fähnrich;* they must go through a ten months' course of professional instruction at a War School, must pass the officers' examination, and be approved of by the officers of their regiment before they can obtain their commissions. Cadets who remain to go through the two highest classes of the cadet school, receive their military instruction in them, before entering the service, instead of at a War School, after having done duty with their regiments; and they pass their officers' examination while still at the cadet school. Those who have been admitted to the highest or *select* class, obtain their commissions at once, and are posted to their regiments as officers. Such as have only been in the second class enter the army merely with the rank of *Portepée-fähnrich;* they must serve in that rank at least six months before they can be commissioned, and must also be approved of by the officers of their regiments.

Three requisites required for a commission.

It will thus be seen that, "in the course usually followed, "three requisites are exacted in Prussia before a commission "is given; firstly, a good general education; secondly, some "actual military service; and, thirdly, professional knowledge "gained by something like a year of military study. But the "military service is not required from the upper students of "the *Selecta* of the cadet house."* These are the educational and professional qualifications demanded from all candidates for commissions. In addition to these requirements, in the case of two-thirds of the officers of the army—those, namely, who enter the service without having passed through the Cadet Corps—a nomination must have been obtained from a commanding officer; and all, except the 50 who annually

Social conditions which must be fulfilled.

* Report of the Commissioners of 1856.

obtain direct commissions from the highest class of the Cadet House, must satisfy the further condition of approval by the officers of the regiment. The exaction of these two last conditions naturally gives an exclusive character to the officers of the army. The whole of the officers of the Prussian army look upon themselves as forming a single corps—the *Offizier-corps* —united by common ties and sympathies; admission to this body is regarded at once as conferring distinctive privileges, and as imposing peculiar duties. The strong *esprit de corps* which pervades the whole body of officers undoubtedly creates an extremely high tone, and a gentlemanly feeling which resents any conduct that might be considered discreditable to the character of an officer; on the other hand, its tendency is to make the officers of the army somewhat of an exclusive caste. There is probably no service in the world in which class spirit is so strongly developed, or which is so aristocratic in character, as that of Prussia. Though almost everyone must serve in the ranks before becoming an officer, yet he does so with the distinct recognition of being a candidate for a commission; none but young men occupying a good social position can obtain the required nomination, still less pass the ordeal of approval by the officers of the regiment.

Class spirit among the officers of the Prussian army.

Promotion from the ranks in our sense of the word—that is to say the promotion of ordinary non-commissioned officers—is in time of peace unknown, and even in time of war is quite exceptional. Distinguished conduct before the enemy is, indeed, recognised by the regulations as a ground for promotion, and for exemption from the examinations for the rank of *Portepée-fähnrich* and officer; but the few individuals who obtain commissions in this manner are seldom left to serve with a regiment, but are pensioned off or provided with civil appointments.

Promotion from the ranks almost unknown.

Candidates for commissions in the artillery and engineers have no special instruction before admission to the service. They join their respective corps, either with the nomination of a colonel or from the Cadet House, exactly in the same manner as those who enter the line; they pass the same examinations, and are required to satisfy the same conditions as to service, attendance at a War School, and approval by the officers of their regiments before obtaining their commissions. Subsequently to this they serve for a further period with their regiments, and eventually, after they have already been three or four years in the service, receive their special instruction as officers of the scientific corps at the Artillery and Engineer School in Berlin; here the officers of engineers pass two years, those of the Artillery, in the majority of cases, complete the required course in one year.

Mode of officering the artillery and engineers.

Promotion in the Prussian service is in all ranks by seniority, tempered by selection. An officer who has been two or three times passed over, may consider that he has received an intimation to retire from the service; and in the higher ranks, if he did not act upon it, he would probably be gazetted out. In the cavalry and infantry promotion up to the rank of captain is regimental; for the rank of major it is partly regimental, partly general through the respective branches of the service; above the rank of major it is, as a rule, general. The artillery is divided into regiments, and in this service promotion is regimental up to the rank of major, after which it is general. In the engineers, which is divided into battalions of four companies each, the promotion in all ranks is general throughout the corps. Promotion.

Except in the artillery and engineers there are no examinations for promotion. Officers of artillery have to pass an examination for promotion to the rank of captain; and those of engineers have, in addition, to pass a further examination before being promoted from captains of the second, to captains of the first class. Examinations for promotion.

The supply of officers for the Landwehr is provided from two sources. Officers of the standing army, who quit the service while still within the limits of age which render them liable to serve in the Landwehr, pass naturally into the latter force as officers. Young men who volunteer to serve in the active army for one year at their own expense (*einjährige Freiwillige*), and have during that period of service obtained the necessary certificates of fitness, are eligible for appointments as officers of the Landwehr. They are required either to take part in one of the periodical trainings of the Landwehr, or to serve from four to six weeks with a regiment of the line; after this they receive the rank of lance-serjeant-major (*Vice-Feldwebel*), are proposed for acceptance to the officers of their battalion, and, if approved, are recommended to the King for appointment as second-lieutenants. As long as such officers are within the limits of age for the Reserve, they are called officers of the Reserve, afterwards officers of the Landwehr. It appears to be a very common practice with the sons of the richer middle classes to volunteer for one year's service at their own expense, with the intention of eventually becoming Landwehr officers. Mode of officering the Landwehr.

The Military Schools.

The various educational establishments at present connected with the army of the North German Confederation may be divided into five classes: Classification of the schools according to their objects.

I. Those which are connected with the preparatory education, or later professional instruction, of combatant officers, viz.:

1. The Cadet Houses or Cadet Schools (*Cadetten Häuser*), seven in number, which are intended to give a general education to the sons of meritorious officers, but are also open to others. A certain amount of military instruction is given at these schools, and the great majority of the pupils become officers in the army.
2. The War Schools (*Kriegs-schulen*), at present six in number, which afford professional instruction to candidates for commissions subsequently to their having entered the army, and served for a certain period in the ranks.
3. The combined Artillery and Engineer School at Berlin (*Vereinigte Artillerie-und Ingenieur-Schule*), for the special education of officers of the scientific corps.
4. The War Academy (*Kriegs-Akademie*), or senior department, intended to afford advanced instruction, chiefly, though not wholly, of a professional character, to officers of all arms, after they have already served at least three years as officers.

II. Those which supply training in special duties to officers, non-commissioned officers, and soldiers already in the service, such as:

5. The military riding school (*Militair-Reit-Schule*) at Hanover, to which each cavalry and field artillery regiment sends a certain number of officers and non-commissioned officers yearly, for instruction in riding.
6. The school of musketry for the infantry at Spandau (*Infanterie-Militair-Schiess-Schule*).
7. The school of gunnery for the artillery at Berlin (*Artillerie-Schiess-Schule*).
8. The central gymnastic school at Berlin (*Central-Turn-Anstalt*), for the training of instructors in gymnastics.
9. The school of pyrotechny (*Oberfeuerwerker-Schule*) at Berlin, for the instruction of non-commissioned officers of artillery in laboratory duties.

III. Those which prepare for admission to the non-combatant branches of the service, viz.:

10. The two army medical schools at Berlin, the Frederic William Institution and the Military Medical Academy.
11. The military veterinary school (*Militair-Rossarzt-Schule*), also at Berlin.

IV. Those intended for the education of the lower ranks of the army, consisting of:

12. The non-commissioned officers' schools (*Unter-Offizier-Schulen*), which afford a preparatory education to fit young men to enter the army directly as non-commissioned officers. They are at present three in number, and are situated at Potsdam, Jülich and Bieberich.
13. The regimental schools (*Regiments-und Bataillons-Schulen*), for the instruction of non-commissioned officers and privates in reading, writing, and arithmetic.
14. The regimental music and swimming schools.

V. Those intended to afford a gratuitous, or nearly gratuitous education to the children of non-commissioned officers and soldiers, such as:

15. The military orphan house (*Grosses Militair-Waisenhaus*), for boys and girls at Potsdam and Pretzsch, the school for boys at Annaburg (*Militair-Knaben-Erziehungs-Institut*), and somewhat similar institutions at Spandau and Stralsund.
16. The garrison schools (*Garnison-Schulen*), established in many of the large garrison towns for the children of men actually serving in the army.

Recent increase in the number of schools.

Of these establishments two of the Cadet Houses, two of the War Schools, the artillery school of gunnery, and one of the non-commissioned officers' schools have been quite recently established, since the war of 1866. And even with these additions, the educational establishments are scarcely sufficient to meet the increased demands caused by the large augmentation of the army. A seventh War School is to be opened this year; an eighth will probably before long be established; and it is likely that two more non-commissioned officers' schools will be founded. It is also said to be in contemplation to establish schools for the formation of a corps of telegraphists for field service, and of a military railway corps, to provide a staff of officials and workmen thoroughly experienced in all duties which might arise in connexion with railways during a campaign.

The control of military education vested in an Inspector General;

The general control of everything connected with the education of combatant officers is in the hands of a single department, presided over by a general officer with the title of Inspector General of Military Education (*General-Inspecteur des Militair-Erziehungs-und Bildungs-Wesens*). This officer holds a position corresponding to that of the Inspector General of the various branches of the service, such as the artillery, the engineers, the train, &c. The Cadet Houses, the War

Schools, the Artillery and Engineer School, and the War Academy are all under the superintendence of the Inspector General, and report to him. The other educational establishments which have been enumerated do not fall within his province; he has nothing to do either with the non-commissioned officers' schools, the regimental schools, or the military orphan houses; in short, his functions are limited to matters connected with the education of combatant officers.

Assisted by a Board of Studies.

The Inspector General is assisted by a Council, called the Supreme Board of Military Studies (*Ober-Militair-Studien-Commission*), composed partly of military men and partly of civilians. This council, however, does not form a special department, exclusively and continuously employed on educational duties, like our Council of Military Education. It is composed of persons holding official military and civil appointments, who merely meet from time to time to assist the Inspector General with their advice, and who receive for this duty a small addition to their ordinary salaries. The president of the commission for conducting military examinations, the directors of the War Academy and of the Artillery and Engineer School, and the commandant of the Cadet Corps are *ex officio* members of the council; the other military members are taken from general and field officers of the staff, or of the special arms, who have been connected with the various schools. The civilian members are generally selected from among eminent professors of the University. There is no limit to the tenure of the appointments by the members of the board of studies; in fact, it is quite exceptional in Prussia to find any limit fixed for the tenure of educational appointments.* It appears, however, that the changes among the military members at least, owing to their promotion or removal from Berlin, are sufficient to keep up an infusion of new blood; too frequent alterations in the constitution of the board seem to be thought undesirable.

Each school has also its own board of studies.

From the members of this Supreme Board sub-committees, as it were, are appointed, who form special boards of studies for the various educational institutions. The business of these special boards is to consider the course and method of instruction at the institutions with which they are respectively connected, to regulate its general principles, and to offer any recommendations for its improvement to the Inspector General of Education.

* The Inspector General of Military Education is still the same officer who held the post in 1856, General von Peucker. Lieut.-General von Holleben, who was at that time his adjutant, is now president of the Supreme Military Examination Commission. Both officers have for many years been almost continuously employed on educational duties.

To the department of the Inspector General of Military Education belongs also the Supreme Military Examination Commission (*Ober-Militair-Examinations-Commission*), a permanent board, consisting of 11 members under the presidency of a general officer, whose duty it is to conduct the examinations which candidates for commissions are required to pass. Further allusion will be made to the constitution and duties of this board when describing the nature of these examinations. It is sufficient here to observe that the board does not (as its name might seem to imply) conduct all military examinations. Its duties are confined to those examinations on which a commission depends, and which are common to all branches of the service. More special examinations, such as those of the students at the Artillery and Engineer School, and at the War Academy, are conducted by other boards of examiners, though at the same time they are more or less under the superintendence of the Inspector General of Education, who in each case receives reports of the results. The examinations of officers of the artillery and engineers for promotion are not under the control of the Inspector General; they are conducted independently by special boards of officers of the respective services.

The examinations for commissions under the control of a special board.

The Inspector General of Military Education is virtually supreme in the control which he exercises over the various educational establishments. On subjects relating to instruction he reports directly to the King; on matters of finance he corresponds with the Minister of War. The recommendation of candidates for nearly all appointments in connexion with the schools rests with him; he proposes them to the King in the case of military, and to the Minister of War in the case of civil appointments. Practically, for many of the subordinate appointments the actual selection of candidates appears often to be left to the boards of studies or the heads of the various establishments; but the individuals to fill the higher posts are selected by the Inspector General himself. An exception is made in the case of the artillery and engineer school, the director of which is recommended for appointment by the curators of the school, who consist of the Inspectors General of the artillery and engineer services.

Authority exercised by the Inspector General.

The actual confirmation of the appointments rests with the King in the case of military officers, and with the Minister of War in that of civilians. But the Inspector General is responsible for the selections made, and his recommendations appear to be invariably acted upon. The appointment of the heads of the various establishments appears to be made entirely on the ground of educational experience or scientific acquire-

He is responsible for all appointments.

ments, and never merely as a reward of military service. Indeed, it would seem that in Prussia an officer may pass nearly the whole of his career in educational employment, with only a few brief intervals of regimental duty. The directors of the various schools, and the commandant and chief officers of the Cadet Corps are almost invariably officers who have been previously employed in subordinate situations in the respective institutions, or who have gone through a course of instruction at the War Academy, the senior department of the Prussian service.

Annual inspections of the schools.

A personal inspection of the various schools is made yearly by the Inspector General. In addition to this, the president and certain members of the Examination Commission every year visit each of the War Schools, for the purpose of conducting the final examination at it; and the reports made on these occasions afford the Inspector General a further means of forming an opinion on the state of the instruction and the capabilities of the instructors at these establishments, which play so important a part in the Prussian system of military education.

Centralization of the system of military education in Prussia.

One of the great objects of the progressive changes which have been introduced in Prussia, has been to centralise the system of military education, and to vest the supreme control over the various establishments and the examinations connected with them in a single authority. Considerable advance has been made in this respect even since the publication of the Report of the Commissioners of 1856. At that time the Division Schools, which then corresponded to the present War Schools, were independent of the Inspector General of Education; and the *Portepée-fähnrich* examinations (or examinations for admission to the army) were conducted by local boards, appointed by the commanders of the various army corps. At the present time, with the exception of the examinations for promotion in the artillery and engineers, everything connected with the instruction and examination of officers is under the control of the central educational department. The great improvements which have been gradually made in the system of military education in Prussia, are universally allowed to be almost entirely due to the ability and energy of General von Peucker, who has for many years presided over the department.

Annual expense to the State of the education of officers.

The annual cost to the State, in connexion with the education of combatant officers, as extracted from the Budget for 1869, is as follows:—

—	Salaries.	Other Expenses.	Total.		Average Number of Students in 1868.
	Thalers.	Thalers.	Thalers.	English Money approximately.	
				£	
Department of the Inspector General	7,850	420	8,270	1,240	—
Supreme Military Examination Commission	7,250	450	7,700	1,155	—
Board of Studies for the War Schools	400	50	450	67	—
Board of Examiners for promotion in the Artillery	—	120	120	18	—
Seven Cadet Houses, at—					
Berlin	51,713	27,109	78,822	11,820	500
Potsdam	7,845	13,501	21,346	3,200	235
Kulm	5,649	18,449	24,098	3,615	180
Wahlstatt	7,466	14,616	22,082	3,310	230
Bensberg	8,038	17,122	25,160	3,775	190
Ploen	8,698	17,000	25,698	3,855	110
Oranienstein	8,698	17,000	25,698	3,855	100
War Academy or Senior Department	20,720	4,739	25,459	3,820	160
Artillery and Engineer School	12,862	5,450	18,312	2,745	250
Six War Schools, at—					
Potsdam	9,040	4,014	13,054	1,960	100
Erfurt	9,040	7,264	16,304	2,445	100
Neisse	9,040	4,014	13,054	1,960	100
Eugers	9,040	4,544	13,584	2,035	100
Hanover	9,040	4,959	13,999	2,100	100
Cassel	9,040	4,959	13,999	2,100	100
For a proposed Seventh War School	9,100	5,413	14,513	2,175	—
Extension of War Academy, and Artillery and Engineer School	—	10,000	10,000	1,500	—
Extension of the Cadet Houses	—	43,196	43,196	6,480	—
Sundries	1,000	5,541	6,541	980	—
Increased pay of Officials	4,300	—	4,300	655	—
Total	215,829	229,930	445,759	£66,860	—

It must be remembered that many of the officials connected with the educational department hold other appointments, and draw their regular salaries under other heads of the estimates; and all who are not provided with residences, receive lodging and fuel allowance. The regimental pay of the students at the War Schools, the Artillery and Engineer School, and the War Academy is drawn from their corps; and to a certain extent, though not entirely, this is the case with the officers and military professors employed at the various schools, the extra pay granted to them being alone in most cases included in the above expenditure. The charge in connexion with the Cadet Schools appears to represent merely the actual cost to the State, after deducting from the total expenditure upon these institutions the payments received from the pupils. No payments are required from the students at any of the other schools.

Schools visited.

Among the schools which have been enumerated, visits were paid to two of the Cadet Schools (the upper school at Berlin, and a preparatory institution at Potsdam), a War School recently established at Hanover, the Artillery and Engineer School, and the War Academy at Berlin. In the description of these schools, and of the Prussian system of military education, the same general arrangement will be adopted as in the Report of the Commissioners of 1856. An account will first be given of the two examinations which, under ordinary circumstances, must be passed by every candidate before obtaining a commission. The two kinds of schools will then be described which give a preparation for these examinations, and afford an education to candidates for commissions before they obtain the rank of officer, viz.:

Arrangement followed in the account.

1. The Cadet Houses, "which give the earliest education, "inclining, though not necessarily leading, their pupils "into the army."
2. The War Schools, which prepare candidates for commissions in all branches of the service for the second, or officers' examination.

A description will follow of the Artillery and Engineer School, in which officers of the scientific corps, after having obtained their commissions by the same course of examination and instruction as those of the line, receive the further training requisite to fit them for their special duties. Lastly, an account will be given of the War Academy, or senior department for officers of all branches of the service who have served for some years; and in connexion with this some reference will be made to the duties of the Prussian staff, which is mainly, though not entirely, recruited by officers who have passed through the War Academy.

THE TWO EXAMINATIONS, GENERAL AND PROFESSIONAL, FOR A COMMISSION.*

Introductory Account.

Conditions of obtaining a commission. Educational qualifications and service in the ranks.

The ordinary mode of obtaining a commission in the Prussian army is at the present time much the same in its general features as it was in 1856. The conditions exacted from all candidates are still certain educational qualifications, combined with some length of service in the ranks; and though numerous changes have been made in the manner in which these conditions can, under various circumstances, be satisfied, the general character of the educational requirements demanded remains unaltered. "Two examinations, one in "*general*, the other in *professional* knowledge, are required of "nearly all candidates for a commission *upon*, or *soon after*, "their entrance into the army."† The first or general examination is based upon the knowledge that may be supposed to be acquired in the public schools of the higher class. There is, both in this and in many other points, so intimate a connexion between the military institutions and the system of national education in Prussia, that it is necessary to say a few words regarding the ordinary civil schools of the country. They are of various kinds:—

Educational qualifications tested by two examinations.

The first in general subjects as taught in civil schools.

The public schools of Prussia.

1. The first-class schools, or *Gymnasien*—corresponding nearly to our public schools—the instruction in which is mainly classical, and is specially intended to prepare the pupils for the universities and the learned professions.
2. The *Real-Schulen*, or second-class schools, in which less classics and more physical science are taught than in the *Gymnasien*, the main object being to prepare the pupils for commercial life. There appear to be two classes of *Real-Schulen*, in the highest of which the course of instruction is nearly the same as in the *Gymnasien*.
3. The *Bürger-Schulen*, or third-class schools, in which the education is in its general character similar to that given in the *Real-Schulen*, but is not so advanced. The first class of a *Bürger-Schule* corresponds nearly to the second of a *Real-Schule*.

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* Much of the information contained in this section was obtained from Lieut.-General von Holleben, president of the Supreme Military Examination Commission.

† Report of the Commissioners of 1856.

4. The *Gewerbe-Schulen*, or trades schools, which are intended chiefly for the education of civil engineers.

All are subject to Government control and inspection.

The general arrangements of all these schools are under State superintendence; all are uniformly divided into classes, which, beginning from the highest downwards, are named *Prima*, *Secunda*, *Tertia*, &c. The course of instruction at each kind of school, the studies to be pursued in the respective classes, and the programmes of the examinations, are all settled by Government; the examinations themselves, though conducted by the authorities of the schools, take place in the presence of Government inspectors. A uniform system of instruction is thus secured, and the attainments of the pupils of the various schools are tested by a common standard.

Object of the first examination for a commission. To prove that the candidates have had a liberal education. Exemptions from the examination in certain cases.

The great object of the first, or general examination, which candidates for commissions are required to pass, is to secure in officers of the army the ordinary liberal education of a gentleman. Those, therefore, who can give satisfactory proof of having already received such an education are exempted from the examination. The necessary evidence of this consists in having successfully completed the full course at a *Gymnasium* or a *Real-Schule* of the first class, and having obtained, on quitting one of these establishments, the final certificate (*Abiturienten-Zeugniss*) which qualifies its recipient for admission to a university. The possession of this certificate is nearly equivalent to having passed the matriculation examination at an English university. It is only in the case of young men who possess this certificate that the preliminary examination in subjects of general education is dispensed with in time of peace; no exception at such times is made to the rule which requires the second, or professional examination to be passed before a commission can be obtained. On active service, however, distinguished conduct before the enemy may be made a ground of exemption from both examinations.

No exemption allowed in peace from the second examination.

The two examinations conducted by a permanent board of examiners.

Both of these examinations are conducted by the Supreme Military Examination Commission (*Ober-Militair-Examinations-Commission*), which consists of a general officer, as president, and 11 members as examiners. The 11 examiners are divided into two sections—the first section, consisting of four military officers, superintends the professional, or officer's examination; the second, composed of seven civilian members, conducts the general, or *Portepée-fähnrich* examination. Both divisions, however, equally act under the immediate superintendence of the president, Lieutenant-general von Holleben, who takes a personal part in all the examinations. The members of the Commission have no connexion with any of the military schools. The military examiners are usually taken

from among officers employed at the War Office or on the general staff; the civilians are selected from eminent professors of the universities, and the appointment is said to be generally considered as a mark of distinction (*Ehrenposten*).

Centralisation of the superintendence of the examinations.

For many years after the institution of the present system of examinations for a commission, there were numeroms independent boards of examination, by which the candidates were examined in various provincial towns. Even at the time of the visit of the Commissioners of 1856, the *Portepée-fähnrich* examination was conducted by local boards, appointed by the commanders of the different army corps. These local boards have now been abolished, and the entire management of the examinations has been vested in the Supreme Board. The same board also conducts the final examinations of cadets quitting the upper Cadet School at Berlin; in fact, it has the general superintendence of all the examinations of young men who are candidates for commissions. The more advanced examinations, however, passed by officers subsequently to obtaining their commissions, do not fall within the province of the board.

Advantages resulting from this.

General von Holleben, who as adjutant to the Inspector General of Education, gave much valuable information to the Commissioners of 1856, and who is now president of the Examination Commission, ascribes the progress which has been made in military education in Prussia in great part to this centralisation of the examination boards; a uniform system of examination has been established, and an influence has thus been exercised not only over military education, but also over the education given in the civil schools of the country.

Powers of the president of the Examination Board.

The Supreme Examination Commission is officially subject to the Inspector General of Education and addresses all its reports to him, but considerable independence of action is allowed to it. General von Holleben is far from being merely the president of a board of examiners in our sense of the word. Though he takes a personal part in the examinations, his duties are not confined to those of an executive examiner. The general control of the regulations bearing upon the educational requirements for admission to the army rests mainly with him; he recommends to the Inspector General such alterations as his experience suggests in these regulations; and the raising and lowering of the standard of examination, according to the requirements of the service, are almost entirely left to his judgment. The civilian examiners are selected by him, and he has the power of dispensing with their services. If, however, the duties are satisfactorily discharged the appointment is permanent, and General von

General von Holleben's views regarding the superintendence of military examinations.

Holleben is decidedly opposed to any limitation in regard to the tenure of such appointments. He is of opinion that there should be as few changes as possible in the body of examiners, as by such changes the benefits of long experience are lost, and uniformity in the system of examination is rendered impossible. He strongly advocates, as the machinery for conducting examinations for admission to the army, in any country where such examinations exist, a special and *permanent* examination board, separate from and to a certain extent independent of the department which has the general supervision of military education. In this way alone, in his opinion, is it possible to base the system of military examinations on the general education of the country, and at the same time to make these examinations react upon the course of instruction in civil schools. The exertion of this influence over civil education has always been considered an important object in Prussia. Some suggestions by General von Holleben, who for 47 years has been connected with military education, regarding examinations for admission to the army, will be found in a memorandum in the Appendix, page 530.

The Preliminary or Ensign's (*Portepée-fähnrich*) Examination.

This examination in subjects of general knowledge, which qualifies those who pass it for the rank of *Portepée-fähnrich*, corresponds nearly to the examination for direct commissions in our service. The Prussian army before 1866 required a supply of between 400 and 500 officers yearly; at the present time owing to the increased strength of the army fully 800 officers are required each year. Of these about two-thirds enter the army direct from civil life, and one-third come from the Cadet Corps. The appointment of the latter is made by the King, the former are nominated by the colonels of regiments.

Number of officers required annually.

The law regarding promotion to the rank of ensign.

Nominally any young man in the army who is above 18 and under 24 years of age, whether he be a non-commissioned officer or private, provided he has served at least six months with a regiment, has obtained certificates from his officers as to his knowledge of military duties, and has given proof of possessing the necessary educational qualifications, is eligible for promotion to the rank of *Portepée-fähnrich*—the first step towards obtaining a commission. The educational qualifications consist either in passing an examination, or in the possession of the *Abiturienten* certificate of a *Gymnasium* or *Real-Schule* of the first class.

The actual practice in the case of

In practice, however, a young man who aspires to a commission, unless he has passed through the senior Cadet House

at Berlin, applies to the colonel of a regiment for a nomination before he enters the service, and joins as an *Avantageur*, a recognised aspirant for the rank of officer. The examination for the rank of *Portepée-fähnrich* may by the regulations be passed either before or after entering the service; but in practice it is usually passed before admission, as colonels of regiments in most cases make their grant of a nomination conditional upon the examination being successfully passed. According to General von Holleben 95 per cent. of the candidates are examined before entering the service. There is, however, no universal rule on this subject, and some colonels allow young men to join their regiments without having passed the examination. Under any circumstances the rank of *Portepée-fähnrich* cannot, at the earliest, be obtained until after six months' actual service in the ranks. The young *Avantageurs* on joining their regiments have the rank, and receive the pay and clothing, of private soldiers. The mode of treating them during their service in the ranks depends much upon the commanding officer of the regiment, the regulations in some regiments being much stricter than in others. For a certain time they have to perform the actual duties of private soldiers, to mount guard, and in the cavalry to clean their horses. In some regiments they are even required to live, sleep, and mess with the privates, though the period for which this is exacted seldom exceeds six weeks. In most regiments they are allowed to find their own lodgings, and to mess with the officers, by whom, except when on duty, they are treated almost as equals. The general principle which regulates their treatment is that they should, by actual performance of the various duties, learn the work of privates, corporals, and non-commissioned officers. There are thus two qualifications for the grade of *Portepée-fähnrich*, the test of the examination and the six months' service in the ranks.

candidates for commissions.

Six months service in the ranks a condition of promotion to the rank of ensign.

The examinations now take place universally in Berlin before the Supreme Military Examination Commission. They are held constantly every week for about nine months of the year, each examination occupying a week. There are thus about 40 examinations in all during the year, at each of which on an average 25 candidates present themselves, making in all about 1,000 candidates yearly.

The examinations held in Berlin.

Application for permission to be examined has to be made through the regiment in which a nomination has been obtained, and the application must be accompanied by certificates giving full particulars of the candidate's age and parentage, and of the various places of education at which he has been brought up, as well as by a medical certificate of

Conditions of admission to the examination.

fitness for the service signed by an army surgeon. Of late years it has been the intention to require from all candidates a certificate of being qualified for admission to the first class of a *Gymnasium* or *Real-Schule*, and an order was at one time actually issued stating that after the 1st of October 1867 this certificate would be insisted upon. Owing, however, to the great demand for officers after the war of 1866, it was found impossible to enforce this order, and it has in the meantime been suspended.

Subjects of examination.

The subjects of examination are as follows:

1. German: in which good legible handwriting, a correct style free from orthographical or grammatical mistakes, facility of expression in writing and speaking, and some knowledge of German literature are required.
2. Latin: comprising the prose authors usually read in the second class of a *Gymnasium*, or *Real-Schule*, with written translations from Latin into German, and grammatical analysis of passages.
3. French: fluency in reading, and in translating from German into French and *vice versâ*, and knowledge of grammar are required.
4. Mathematics, comprising—
   - (*a.*) Arithmetic: the elementary rules, fractions and decimals, simple and compound proportion, and partnership.
   - (*b.*) Algebra: the elementary operations; the theory of indices and roots; extraction of square roots; logarithms; simple and quadratic equations with one or more unknown quantities; the elements of logarithmic equations; proportion; arithmetical and geometrical progression; interest, and some knowledge of series.
   - (*c.*) Geometry: elementary plane geometry, including the mensuration of rectilineal figures and circles; application of algebra to geometry.
   - (*d.*) Plane trigonometry: trigonometrical functions and ordinary formulæ; use of trigonometrical tables; solution of triangles; calculation of the areas of regular polygons and segments of circles.
5. Geography: the general principles of mathematical and physical geography; the principal rivers and mountain-chains of the world, especially of Germany; readiness in drawing from memory the outlines of the more important countries, with their chief mountains, rivers, and cities; detailed knowledge of the

political geography and statistics of European States, especially Germany and Prussia; general outlines of the political geography of the more important States out of Europe.

6. History: a general knowledge of the more important events in the history of great nations, and of the most distinguished historical personages of all countries, down to the present time; special knowledge of the history of Greece, Rome, Germany, and Prussia, with particular reference, in the case of Prussia, to the growth of its territory, the development of its constitution, and to the principal events of the most important wars in which it has been engaged since the middle of the 18th century.
7. Drawing: free-hand and geometrical drawing, and some proficiency in the conventional signs of topography, and in hill sketching.

Extra subjects allowed.

The above subjects are obligatory; the candidate may, in addition, offer for examination certain other subjects in which his certificates show that he has received instruction, such, for instance, as natural science or modern languages.

Mode of conducting the examination; partly on paper, partly *vivâ voce*.

The examination lasts in all a week, and is partly on paper and partly *vivâ voce*. Four days, from Monday to Thursday, are occupied in the paper work; the *vivâ voce* examination follows on Friday and Saturday. During the paper work the candidates are all examined together, the examination lasting from 8 to 3 o'clock each day, with occasional intervals of a quarter of an hour. In the *vivâ voce* examination half the candidates are examined each day; about six candidates are taken together at a time, and are questioned for nearly an hour in each separate subject. The *vivâ voce* examination extends over all the subjects, with the exception of drawing. During the paper work the examiners are not present; it takes place in the presence of General von Holleben and certain inspecting officers, whose duty it is to prevent any improper assistance being made use of by the candidates. The *vivâ voce* examination is conducted by the seven civilian members of the Military Examination Board, who act as examiners in the *Portepée-fähnrich* examination.

The written examination.

The questions in the paper work examation are not printed, but are dictated to the candidates, and are generally set in pairs, so as to afford every one a choice between two parallel questions, one of which only he is required to answer. A fixed time is allowed for answering each question, generally about three quarters of an hour or an hour; for the German essays it is as much as an hour and a half or two hours. At

Specimens of the questions.

the expiration of the given time the papers are collected, and a new pair of questions is dictated. To afford an idea of the nature of the examination, a list of the questions set on a recent occasion is here given :—*

I.—Mathematics (*three quarters of an hour allowed for each question*).

1 (*a.*) If $a+c=2\,b$ and $\frac{1}{b}+\frac{1}{d}=\frac{2}{c}$, then $a : b :: c : d$.
1 (*b.*) What is the interest of $912\frac{1}{2}$ thalers for 72 days at 4 per cent. ?

2 (*a.*) Log. $x+$ Log. $(x+3)$ to be analysed.
2 (*b.*) $x^2-(a^2+b^2)\,x+(a^2-b^2)\,a\,b=0$.

3 (*a.*) To describe a square with its angular points on the sides of a given square, and such that its sides make given angles with the sides of the given square.
3 (*b.*) Let O be a given point within a given triangle, A B C, it is required to trisect the triangle by lines drawn through O, one of the dividing lines being O A.

4. In a given triangle A B C, $a = 28\cdot440$, $b = 17\cdot803$, $c=29\cdot630$; find the angle A.

II.—Geography (*three quarters of an hour allowed for each question*).

1 (*a.*) The lowland plain of North America.
1 (*b.*) The peninsula of the Haemus.

2 (*a.*) Westphalia.
2 (*b.*) The Rhine above Mayence.

3 (*a.*) Tropical plants.
3 (*b.*) The barometer and thermometer.

III.—History (*three quarters of an hour allowed for each question*).

Ancient — (*a.*) The Age of Pericles.
Ancient — (*b.*) The struggles between the Plebeians and Patricians.

Middle ages. (*a.*) Henry IV.
Middle ages. (*b.*) The Town Confederations.

Modern — (*a.*) Elizabeth and Catherine of Russia.
Modern — (*b.*) The year 1814.

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* Further specimens of the examination questions will be found in the Appendix, page 531.

IV.—Subjects for German themes (*two hours allowed for each*).

1. Jedes Haar hat seinen Schatten,
   Jede Ameise ihren Zorn.*
2. Autumnal pleasures.

V.—Latin translations (*three quarters of an hour allowed for each*).

1. Cæsar, liber II., 34.
2. Livy, liber V., 19.

VI.—French translations (*three quarters of an hour allowed for each*).

1. Translation from French into German.
2. Translation from German into French.

For the first of the two German themes the examiner gives a short verbal outline of the mode of treating the subject; in the second the candidates are left entirely to themselves. In topographical drawing a description of the main features of some piece of ground is dictated to the candidates, who are then required to make a drawing of the ground to scale answering the given description. Besides this, they have either to copy a small piece of hill sketching, or to draw a group of hills from a model placed before them.

Character of the examination. Requirements expected in the answers.

The questions in each subject, it will be seen, are fewer in number, and more comprehensive in character than is the case in the military examinations in England. The answers to the questions are expected to approach nearly to the form of short essays. Very great importance is attached to style, correct composition, and systematic arrangement; and a candidate's attainments in German are estimated not only by his answers to the special questions in that subject, but by the general style of his answers in all the subjects. Little value as a rule is attached to mere knowledge of detail as exhibited in the answers; in fact the main object of the examination, as stated by General von Holleben, is not so much to show that a candidate has any given amount of positive knowledge, as that he has sufficient intellectual capacity to put his knowledge to a useful purpose. This will be found to be a leading idea in all the military examinations in Prussia.

System of marks employed.

A uniform system of marking is adopted in all Prussian examinations. A candidate's answers in each subject are

* "Every hair has its shadow, every ant its rage."

characterised by a series of *predicates* on epithets, called also *censures*, to which a numerical value is attached, according to the following scale, from 9 to 1:—

Predicate:	Numerical Value.
Excellent (*vorzüglich*)	9
Very good (*sehr gut*)	8
Good (*gut*)	7
Tolerably good (*ziemlich gut*)	6
Satisfactory (*befriedigend*)	5
Middling (*mittelmässig*)	4
Insufficient (*nicht hinreichend*)	3
Almost unsatisfactory (*fast ungenügend*)	2
Completely unsatisfactory (*ganz ungenügend*)	1

Relative importance of the various subjects.

According to the amount of importance attached to the different subjects, the numerical marks corresponding to the predicate obtained are multiplied by a higher or lower number, analogous to what is called in France the "co-efficient of importance." The numbers representing the relative importance of the various subjects in the *Portepée-fähnrich* examination are:—

German	5	Total 25.
Latin	5	
French	3	
Mathematics	5	
History	3	
Geography	3	
Drawing	1	

A candidate who obtained the predicate "excellent" in German, Latin, or mathematics, would thus obtain 45 marks in each of these subjects, his nine being multiplied by five, whereas the same predicate in French, history, or geography would give him only 27 marks, and in drawing only nine.

The marks obtained in any extra voluntary subjects which a candidate may take up, have only their actual value, as in drawing. The paper work and *vivâ voce* examination have both the same value; the marks gained in each are added together and the sum is divided by 2.

Decision as to the result of the examination.

The predicates to be assigned to each candidate, and the general result of the examination are definitely determined at a meeting of the whole body of examiners, under the presidency of General von Holleben. As in nearly all the examinations in Prussia, there is an entire absence of competition; the candidates are only required to come up to a certain qualifying standard; they are not arranged in order of merit; and no list of the result of the examination is made

public. The principle which determines the minimum standard of qualification, is that in the general result of the examination the *predicate* "satisfactory" (*befriedigend*) should be obtained by a candidate; or, in other words, that the arithmetical mean of the marks gained in all the subjects should be five, the numerical value of this *predicate*. A minimum standard of qualification exacted.

Practically, however, a certain number of marks is from time to time fixed as the standard which must be reached. The maximum number of marks which can be gained by a candidate who obtains the highest *predicate* of "excellent" (*vorzüglich*) in every subject, is 225 (9×25); in order to obtain the average predicate of "satisfactory" (*befriedigend*), 125 marks (5×25) would be the total required, and this under ordinary circumstances is the minimum exacted; but at the present time the minimum is fixed at 113, as nearly as possible half the maximum aggregate of marks, which represents rather a lower general average than "satisfactory."

In individual subjects no particular standard need be reached, except in German, in which the predicate "*befriedigend*" must necessarily be obtained by every one, no superiority in the other subjects being allowed to compensate for inferiority in this. A somewhat higher mathematical standard is also required from candidates for the artillery and engineers; they must in mathematics obtain the predicate "*ziemlich gut*," the numerical value of which is 6.

The Military Examination Commission decides whether a candidate has passed or not; in the latter case a second trial is always allowed afterthree, six, or twelve months' interval. A candidate is not necessarily re-examined in all the subjects, he is excused from further examination in any subject in which he has, both in paper work and *vivâ voce*, reached the required standard of "satisfactory" (*befriedigend*). The result in the case of each candidate is communicated to his regiment by the Examination Commission, who merely state whether he has passed creditably (*gut*), passed satisfactorily (*befriedigend*), or has failed. In the latter case it is stated what interval must elapse before he can again offer himself, and whether he will be re-examined in all or only in certain of the subjects. Further trials allowed to those who fail. Announcement of the result of the examination.

According to the regulations, candidates are only allowed two chances of passing the examination; but this rule does not appear to be very strictly enforced, and a third trial is frequently allowed to those who have twice failed. More than three trials, however, are seldom permitted.

A very large number, from one-half to two-thirds of the candidates, fail on the first occasion; out of the 25 who present themselves at each weekly examination, as many as 16 Large number of failures which occur.

are often plucked; so that of the 1,000 candidates who are at present examined yearly, many are examined for the second or third time. The great majority eventually succeed in passing the examination; the number of complete failures does not amount at the outside to more than 10 per cent. Those who fail altogether are obliged to perform the regulated period of military service as common soldiers; the privilege is even denied them of reducing their three years in the active army by serving as volunteers for one year (*einjährige Freiwilligen*) at their own expense.

Promotion to the rank of ensign.

"The young men who pass are thus, so far as their qualification in point of knowledge is concerned, pronounced admissible to the ensign's grade. They have of course to complete their six months' service with the troops. Yet even when this is completed, a vacancy in the list of ensigns must be waited for, and months may pass before the aspirant receives the distinctive badge, the special knot, which marks his superiority to the serjeants, and shows that he has gained the first step that leads to a commission."* The rank of *Portepée-fähnrich* appears to be seldom obtained before nearly a year's active service. Cadets who enter the army from the Cadet Corps have the same examination to pass for the grade of ensign as the ordinary *Avantageurs;* they pass it also before the same examiners; the only difference is, that they are examined while still at the Senior Cadet House at Berlin.

Means by which preparation is made for the examination.

The *Portepée-fähnrich* examination, it will be seen, is one which requires no special military knowledge; it is considered that the usual instruction given in the higher classes of the best public schools of the country should be sufficient preparation for it; and it is the intention of the Government that the knowledge required for the examination should be based on the ordinary attainments of young men at these schools. It is singular, however, that the examination is looked upon by the pupils of these schools in Prussia with the same feelings of alarm with which the examination for admission to the army is generally regarded by those educated at public schools in this country. There is the same distrust of the ordinary school education as a preparation for the examination, and the same dread of failure unless recourse is had to private tuition. "Military crammers" are an institution as well-known in Prussia as in England; the profession is said to be an extremely profitable one; and the Berlin newspapers contain numerous advertisements of

Private tuition much resorted to.

* Report of the Commissioners of 1856.

establishments where "rapid and certain preparation is given "for the military examinations."

General von Holleben's opinion on this subject.

General von Holleben, by whose kindness much interesting information in regard to the ensign's examination was furnished, stated it as his opinion that a young man who has been in the first class (Prima) of a *Gymnasium* or *Real-Schule* should certainly be able to pass the examination without having recourse to a crammer; and that one who has been in the upper second (Ober-secunda) should in most cases be able to do so. This may be considered the general rule, subject to certain exceptions, as all the *Gymnasien* and *Real-Schulen* are not equally good; at the present time especially many of the schools in the provinces which have been annexed since 1866 are inferior to the old schools of Prussia. At the age of seventeen and a half, which is the earliest age at which the ensign's examination is passed by candidates who have not passed through the Cadet Corps, a young man ought to be in the Ober-secunda or Prima of these schools; backward or idle pupils, however, are at this age often found even in the third class (Tertia); and instead of remaining at the school sufficiently long to get into the higher classes, they induce their friends to send them to a cramming establishment (*Presse*), where in a shorter time they are crammed (*eingepeukt*) with just the necessary amount of knowledge to get through the examination. The great majority of the candidates who are examined have been at one of these establishments, but some have been merely for a short period of two or three months, while others have been at them as long as two years. Even those who have not been at a regular crammer's, have in most cases had private instruction of some sort. Very few come direct from the public schools, because, as a rule, it is only the idle pupils at these schools who come up for the ensign's examination; those who are diligent prefer completing the full school course and obtaining the *Abiturienten* certificate, which exempts them from the examination. General von Holleben appears to allow that in many cases some amount of special preparation may be required for the examination, and that in giving this preparation more time and care can be bestowed on a pupil at a private establishment than at a public school. He would not object to private tuition being resorted to for a short time previous to the examination by those who had already gained admission to the highest classes of a *Gymnasium* or *Real-Schule*. The great evil of the existence of cramming establishments is, in his opinion, that youths are taken away from the public schools while they are still in the lower classes, before they have learnt anything thoroughly,

A certain amount of special preparation for the examination is probably necessary.

Evils of cramming establishments.

and are sent to a crammer's, where the instruction is superficial and limited, so that their real education is never completed. General von Holleben states that the consequences of this want of sound education are apparent in the manner in which such young men pass not only the ensign's examination, but also that at a later period for the rank of officer. The absence of any efficient control over the pupils is also found to be, as in England, one of the great evils of the cramming establishments; it is said that young men who have been any length of time at them generally exhibit a lower moral tone than those who enter the service direct from the public schools, and frequently exercise a very injurious influence over their comrades in the army.

Attempts on the part of the government to discourage such establishments.

Thus, both on educational and moral grounds, the Prussian authorities are strongly opposed to the cramming establishments. It does not appear that the idea of attempting to exercise any governmental control over them has been suggested: the object seems rather to be to discountenance them, and to introduce regulations which would render the intervention of a crammer useless as a means of preparation for the examination. There is apparently a wish at the present time to make the examination as strict as possible in the case of young men who are known to come from cramming establishments. The strict certificates required from every candidate show the course of instruction he has passed through, and the length of time he has been at each place of education; and as the examination is merely a qualifying one, it is not difficult to raise the standard of qualification in individual cases. It is hoped ultimately that it may be possible to substitute for the present examination an educational test dependent on the ordinary civil schools. Even at the time the Commissioners of 1856 visited Prussia, young men who had passed successfully through the full course of a *Gymnasium* were exempted from the ensign's examination; the certificate received on quitting the school after passing the *Abiturient's* or leaving examination, which qualifies the recipient for admission to a university, was considered sufficient proof of their general education. An exception was, however, at that time made in the case of candidates for the artillery and engineers, who were required to show greater proficiency in mathematics. This exception has been now abolished; the *Abiturienten* certificate is considered sufficient in the case of candidates for all branches of the service; and the privilege of exemption from the examination, formerly confined to the *Abiturienten* of a *Gymnasium*, has been now extended to those possessing the same certificate from a *Real-*

Proposal to substitute a certificate from the schools for the examination.

This principle already acted upon to a certain extent.

Schule of the first-class. At the present time at least 200 *Abiturienten* enter the army yearly without being required to pass any examination; in 1856 their number did not exceed 50. They are said to prove a very superior class of officers, as far as educational attainments go; the best pupils at the War Schools (which give the professional education for the rank of officer), and at the War Academy (or senior department) are furnished almost exclusively by the *Abiturienten* and by those who have passed through the highest class of the Cadet House.

And will ultimately be still further extended.

Such is the importance attached in Prussia to a good general education as a preparation for a military career, that it is hoped that in the course of time none but *Abiturienten* of a *Gymnasium* or a *Real-Schule—i.e.*, young men who are qualified for admission to a university—will be admitted to the army as candidates for commissions. To arrive at this result has, according to General von Holleben, been the object constantly kept in view by those charged with the superintendence of military education. The standard of the ensign's examination had for many years been constantly, though almost imperceptibly, increased; and before the war of 1866 such progress had been made towards the desired end, that (as already noticed) a regulation had been issued rendering admission to the examination conditional upon the possession of a certificate of fitness for the first class of a *Gymnasium* or *Real-Schule*. The want of officers after the war made it necessary to suspend this regulation, and has for a time checked progress; the strictness of the examination has been somewhat relaxed, and the qualifying standard has been slightly lowered, with the object of adapting it to candidates from the smaller States, now forming part of the North German Confederation, in which the schools were inferior to those of Prussia. As soon, however, as these exceptional circumstances have passed away, progress will be resumed; the Examination Commission are even already beginning gradually to raise the standard of the examination again; the next great step taken, as soon as circumstances permit, will be the exaction of the certificate of fitness for the first-class of the public schools; this, besides being an educational test, is expected to inflict a serious blow on the cramming establishments, as parents will be obliged to leave their sons longer at the public schools instead of taking them away while they are still in the lower classes. Ultimately it is intended to substitute universally for the ensign's examination the *Abiturienten* certificate of a *Gymnasium* or *Real-Schule*.

Strictness of the regulations at present relaxed owing to the demand for officers.

But will shortly be again increased.

Necessity of avoiding too high a standard.

At the same time General von Holleben, while wishing to see none but the *Abiturienten* accepted as candidates for commissions, is fully alive to the disadvantage of attempting to fix too high a standard for admission to the army. He allows that many men make excellent regimental officers without possessing very high intellectual attainments, and he is averse to any regulation which would have the effect of excluding this class of candidates. He does not appear to think that the test of the *Abiturienten* certificate would be so severe as to exclude them, at least not as a general rule, although it might do so in individual cases. Judging from the experience of the past, he is of opinion that the standard fixed will in time, under ordinary circumstances, be reached by the majority of the candidates, though it may require time before this result is attained, and occasionally, when the demand for officers is great, it may be necessary to make a retrograde step. General von Holleben strongly recommends, in any system of examinations for admission to an army, that at the commencement a low standard of qualification should be adopted—lower even in the first instance than may be required to suit the ordinary state of civil education in a country. The standard should subsequently by slow degress be raised; but every change should, in his opinion, be very gradual. If this precaution be adopted, he maintains that civil education will in time adapt itself to the demands of the military examinations. At the same time it must be observed that, owing to the peculiarities of the military system of Prussia, there is a much closer connexion between civil and military education than in most countries; and that young men have the strongest inducement to reach any educational standard that may be fixed as a condition of a commission, since, in the event of their failing to qualify themselves for the rank of officer, they have before them the prospect of compulsory service in the ranks.

The standard required will in time be attained.

If it is gradually raised.

Further conditions to be fulfilled before obtaining a commission.

It must be remembered that, either before or after the ensign's examination, at least six months must be spent in actual service with the troops by all but those who have passed through the two highest classes, the Selecta or Oberprima, of the Berlin Cadet House, before the grade of *Portepée-fähnrich* can be obtained; and that under ordinary circumstances 10 months of study at a War School intervene before the officers' examination takes place.

The Second or Officer's Examination.

The examination obligatory on all candidates for commissions.

The second or final examination for the rank of officer is in purely professional subjects, and must be passed by all candidates for a commission, even by those who are exempted

from the *Portepée-fähnrich* examination. The only exemption allowed is in the case of very distinguished conduct before the enemy. Candidates for examination must be under 26 years of age, must have held the rank of *Portepée-fähnrich* for at least six months, and, except in special cases, must for 10 months have attended a War School. The examination is conducted by General von Holleben and the four military examiners who form the first division of the central Examination Board. The preparation for the examination is ordinarily given by a 10 months' course of instruction at a War School, to which candidates for commissions are sent after having passed the ensign's examination, and having served at least five months with their regiments. Cadets, however, who have obtained admission to the two highest classes (the Selecta and Ober-prima) of the Berlin Cadet House, receive their military instruction in these classes instead of at a War School, and pass their officer's examination before quitting the Cadet House. Exemption from attendance at a War School is also granted:—

Conditions of admission to it.

Preparation for it ordinarily given at a War School.

Exceptions to this rule.

(1.) To young men who have studied for at least one year at a university before entering the army;

(2.) To Landwehr officers who have received permission to be transferred to the active army.

These candidates are allowed as a special privilege to prepare themselves for the examination without going through the usual War School course; and at the present time, owing to the demand for officers, the same exceptional favour is granted to a few other candidates for commissions, although not entitled to it by the regulations of the service.

The examinations were formerly held in Berlin, the candidates being sent up periodically from the various army corps after they had gone through a course of instruction at the Division Schools, which then corresponded to the present War Schools. During their stay at Berlin the candidates were quartered in the buildings where the offices of the Examination Commission are situated, and were for purposes of discipline subject to the authority of the president of the Commission. This is the course still prescribed by the regulations, although it is no longer carried out. Owing to the want of accommodation both in quarters and in the examination hall at Berlin, only a small number of candidates can be examined there simultaneously. The candidates would, therefore, have to come up to Berlin in such numerous small batches that the time of the Commission would be completely taken up in holding the examinations all the year round. It would also be impossible to examine all the students from the

The examinations formerly held at Berlin.

same War School together; and thus it would either be necessary to interfere with the course at the War Schools, or to keep many condidates waiting a long time for their examination after they had finished their War School course. To avoid these practical inconveniences, and to save time and the expense of bringing the candidates up to Berlin, the examination is now held at each War School on the conclusion of the annual course, the school being visited for this purpose by General von Holleben and two other members of the examination commission. Only those candidates who are exempted from attendance at a War School pass the examination in Berlin.

But now usually takes place at the War Schools.

Number of candidates annually.

On an average 800 candidates are examined yearly for the rank of officer, this being the number required, with the present strength of the army, to supply the annual vacancies among the officers. Of these about 150 are examined at Berlin, and 650 at the various War Schools. It has already been stated that nearly 1,000 candidates are examined each year for the *Portepée-fähnrich* examination; besides which fully 200 *Abiturienten* obtain that grade who pass no examination. It appears, therefore, that a considerable number of those who originally present themselves as candidates for commissions do not eventually come up for the officer's examination. Some have entirely failed in the preliminary examination; others have relinquished their intention of becoming officers, either from discovering that they could not hope to obtain the necessary approval of the officers of their regiments, or from other causes; ordinary casualties account for the disappearance of a certain proportion of the candidates.

The examination is entirely in military subjects.

The officers' examination, like the preliminary one for the grade of *Portepée-fähnrich*, is partly on paper and partly *vivâ voce*. The subjects of examination are purely military, and are the same as those which form the course of instruction at the War Schools, viz., tactics, science of arms (*Waffenlehre*), fortification, surveying, knowledge of military duty (*Dienstkentniss*), and military drawing. There is no practical examination in drill, but questions on the subject are asked under the head of tactics. The mode of conducting the examination will be more fully described in the account of the War Schools, at the conclusion of the course at which it is held in the majority of cases.* It will be sufficient here merely to notice the general features of the examination. The value of the candidates' answers is estimated by the system of *predicates*

* A specimen of the questions set in the examination will be found in the account of the War Schools, page 261.

already described for the *Portepée-fähnrich* examination. The relative value of the various subjects is as follows:— Importance attached to the various subjects.

In tactics, the marks gained are multiplied by			5
„ Science of arms	„	„	5
„ Fortification	„	„	4
„ Surveying	„	„	3
„ Knowledge of military duty		„	3
„ Military drawing	„	„	1
Total			21

The examination is not competitive. The condition of qualification is in principle the same as in the *Portepée-fähnrich* examination. A candidate, in order to pass, is required in the final result to obtain the predicate "satisfactory" (*befriedigend*), *i.e.*, a general average of five marks out of nine, when all the marks he has gained are added up and divided by 21. This of course would require a minimum aggregate of 105 marks to be obtained. At the present time the standard of qualification is somewhat lower, and the minimum of marks practically exacted is 100, or a general average of 4·76. There is, however, no obligatory minimum in any individual subject as is the case with German in the *Portepée-fähnrich* examination; the result is determined by the general average of the marks gained in the subjects taken as a whole. Conditions required in order to pass the examination.

At the conclusion of the examination the Commission holds a meeting, at which each candidate's case is considered individually. The decision is given in the form of *predicates*, as in the *Portepée-fähnrich* examination. A candidate who passes a very first-rate examination can be recommended for the King's commendation (*Königs Belobigung*); this is the only distinction offered to special ability, and it is but rarely awarded. Those who fail are allowed a second, and, nominally, a final trial after three, six, or twelve months, according to circumstances; this re-examination may be either complete or partial. Determination of the results.

If a candidate fails on a second occasion he is, strictly speaking, ineligible for a commission; but in exceptional cases, by the special permission of the King, a third trial may be granted. Failures, however, in the officers' examinations, appear to be very rare; indeed, among the candidates themselves, this examination seems to be considered much less severe than that for the grade of *Portepée-fähnrich*, and it is said that any one who has passed this preliminary test should have little difficulty in succeeding at the officers' examination. It was stated that at the outside not more than eight per cent. Course adopted with those who fail.

of all the officers of the army have gone up for the examination a second time.

No public announcement of the result.

The result of the examination is not publicly announced, but is in the case of each candidate communicated to his regiment. Those who have passed receive certificates stating the predicates assigned to them in the various subjects of examination, and declaring them qualified for commissions as second lieutenants.

Promotion; its conditions.

"This rank, however, is not immediately granted. A "vacancy may be long in occurring, and must be waited for. "Promotion is given according to their seniority on the list "of ensigns in the regiment. Another condition must also "be satisfied. When a vacancy occurs the senior ensign's "name cannot be submitted to the King for his appointment "without a document stating, on the part of the officers of "the regiment, that he has the requisite knowledge of the "duties of the service, and that they consider him worthy of "admission amongst them (*würdig in ihre Mitte zu treten*). "If the majority is opposed to his admission, the name of the "next ensign in order of seniority is, without further discussion, brought forward; if a minority or merely some "individual officers take exception they state the grounds of "their opinion, which are then submitted for consideration."*

A candidate must be approved by the officers of his regiment.

It appears that comparatively few cases occur in which the promotion of an ensign to a commission is vetoed by the officers of the regiment. In the case of *Avantageurs* who are nominated by the colonel, the latter officer, before giving a nomination, generally satisfies himself by careful inquiries that a young man is one who, both from his family connexions, his character, and manners, will be acceptable as an officer. In the case of cadets the same precaution is taken by the authorities of the Cadet House before recommending the appointment to the King. Still there can be little doubt that the existence of the right of a veto, even though there may not frequently be a necessity for exercising it, must materially influence the conduct of young men on first entering the service. Occasionally in the Guard the veto is exercised, not on any grounds dishonourable to the candidate, but because his means are not sufficient to support the expenses of the corps; in such a case he would be allowed to enter some other regiment. But an ensign whose promotion is vetoed on grounds affecting his character can never become an officer; he would generally be transferred to the Reserve; but in whatever branch of the service he may be he remains for life a marked and disgraced man.

Effects of this right of veto.

* Report of the Commissioners of 1856.

A somewhat different course in regard to the officers' examination was formerly pursued in the case of candidates for commissions in the scientific corps. Their preparation for the examination was given, not at the War Schools, but at the Artillery and Engineer School, to which they were sent after nine months' service with their regiments. They now, up to the time of obtaining their commissions as second lieutenants, follow the same course of instruction as candidates for the line, but they have subsequently to satisfy a further condition. They serve with their regiments for a certain time longer, and are then sent to the Artillery and Engineer School, where they are required to pass a special examination before they are considered finally qualified to take their place as officers of the scientific corps.

Candidates for the artillery and engineers pass the same examination as those for the line.

General Remarks on the Two Examinations for a Commission.

In both of the examinations which have been described there appears to be less strictness in enforcing the regulations than is the case in similar examinations in England. The standard of qualification which must be reached is somewhat vaguely defined, and rules are interpreted with some laxity; exceptional circumstances appear to be taken into consideration in determining the number of trials to be allowed to those who fail, and there seems to be a disposition at the present time to give candidates every possible chance of passing. These features in the character of the examinations are probably to some extent due to the entire exclusion of the competitive principle, and to the fact that no public announcement of the result is made. With regard to the absence of competition General von Holleben stated that, while he did not see any positive objection to the competitive system, provided the names of those who failed were not published, he could recognize no necessity for it, and did not believe that there would be any advantage in introducing it either in the ensigns' or officers' examination. It must be remembered, however, that the number of appointments to be obtained by passing the ensigns' examination is never less than the number of candidates, as only those who have already received a nomination from a colonel of a regiment can offer themselves for examination. Hence, as there are no prizes to be competed for, there is no actual necessity for selecting the best candidates. The system of admission to the army with the view of obtaining a commission is by nomination combined with the test of a qualifying examination. The competition, if

Laxity in enforcing the regulations.

Rejection of competition in the examinations.

there is any, is for the nomination; but certainly at the present time there seem to be more vacanciess than candidates.

Importance attached to a liberal education as the condition of a commission.

The great importance attached in Prussia to securing a good general education in all the officers of the army has already been frequently noticed. "The first and great "object of the military examinations," to use General von Holleben's words, "has been to secure a liberally educated "body of officers (*ein gebildetes Offizier-corps*), not, however, "over-educated (*übergebildetes*); the second object has been "to secure a professionally-educated body of officers (*ein "berufsgebildetes Offizier-corps*"). There is an evident desire not only to exact a liberal education from all candidates for commissions, but to offer inducements to men of higher educational attainments to adopt the military profession. Young men provided with the *Abiturienten* certificate are exempted from the *Portepée-fähnrich* examination. Those who have studied for a year at a university are not only exempted from this examination, but also from attendance at a War School. Further special advantages are also offered to those who have carried their civil education to this length; they may be appointed supernumerary ensigns immediately on the conclusion of their six months' service with the troops, without waiting for vacancies; they may, immediately after promotion to the rank of *Fähnrich*, go up for the officers' examination without performing the six months' service in the grade of ensign which is ordinarily required; and on passing this examination, if they are accepted by the officers of their corps, they may at once be commissioned as supernumerary second lieutenants, even though there should be no vacancies in the regiment. It thus appears that in Prussia even an incomplete university education is thought such an advantage to an officer, that a young man who has this qualification is allowed to obtain his commission as second lieutenant in little more than six months' time after admission to the army—or in considerably less than half the time in which, under the most favourable circumstances, a commission can be usually obtained.

Advantages offered to men of good education.

Service ordinarily required before a commission is obtained.

An ordinary *Avantageur* must serve at least five months with the troops before he can be sent to a War School; and he has to remain 10 months at the War School before he can pass his officers' examination; so that, under the most favourable circumstances, and on the supposition that no delay is incurred in waiting for a vacancy, at least 15 months' service must be performed before a commission can be obtained. It is seldom, however, that a young soldier is recommended for admission to a War School so soon as five months after entering the service; and after passing his

examination there he generally has to wait some time for the vacancy which will give him his commission. Thus the average length of service required before promotion to the rank of officer is nearly two years, while 15 months is the minimum. Exceptions to this average occur in the case of:—

Exceptions to the ordinary rule.

1. Students of a university, as already noticed.
2. Officers transferred from the Landwehr to the active army, who are also exempted from the War School course, but still have to wait for a vacancy before obtaining a commission.
3. Cadets who have passed through the two highest classes of the Berlin Cadet House. Those who come from the Selecta, or highest class, enter the army directly as officers; those who come from the second class, or Ober-prima, obtain their commissions after six months' service.

Age of entering the army.

The *earliest* age at which *Avantageurs* ordinarily enter the army is 17½; the rank of *Portepée-fähnrich* cannot be obtained before the age of 18, and six months' service are required as a qualification for it. Cadets, however, from the Berlin Cadet House are allowed to obtain this rank at the age of 17½. A *Portepée-fähnrich* must serve at least six months in this rank before he can pass his officer's examination, so that, except in the case of cadets, 18½ is the *earliest* age at which the officers' examination can be passed. On the other hand, no candidate can be examined after the completion of his 25th year. The age at which the examination is actually passed was stated by General von Holleben to vary considerably with the various classes of candidates:—

Age at which the officers' examination is passed.

(*a.*) The youngest candidates are those who enter the army from the Cadet Corps; their average age at the time of passing the officers' examination is 18½. Those in the two highest classes (the Selecta and Ober-prima), who pass the examination at the Cadet House, are generally younger than those who have, after entering the army, to go through a course at a War School; but 18½ may be taken as the average age for the whole.

(*b.*) *Abiturienten* of a *Gymnasium* or *Real-Schule*, who have been exempted from the ensigns' examination, generally pass the officers' examination about the age of 19½.

(*c.*) Ordinary *Avantageurs*, who form, of course, the large majority of the candidates, are generally rather older than the *Abiturienten* on passing the officers'

examination; for though they may not have remained so long at a civil school, they are frequently thrown back by failure in the ensigns' examination. They are in general fully 20 at the time of passing the examination.

These were stated by General von Holleben to be the averages. The extreme limits of age at which the examination is ever passed are 17½ (in the case of cadets in the Selecta of the Cadet House*), and 25—those who pass it at a late age being chiefly officers transferred from the Landwehr. Both of these, however, are exceptional cases. As a rule, in the majority of cases the officers' examination is passed between the ages of 18½ and 21. It must also be remembered that even after the examination is passed, an interval of some months usually occurs before a commission is obtained. At the same time a second lieutenant in the Prussian army on obtaining his commission is, from the training he has gone through, fit for any regimental duty, and therefore occupies a different position from a newly-joined ensign in the English service. The final examination on which his commission depends is more analogous to our examination for promotion to the rank of lieutenant than to that for admission to the army.

Various conditions of obtaining a commission.

Before concluding it may be well to recapitulate briefly the conditions required under ordinary circumstances from candidates for commissions in the Prussian army:—

1. Proof of a good general education, afforded either by the *Abiturienten* certificate of a *Gymnasium* or *Real-Schule*, or by passing the ensigns' examination.
2. From five to six months' service *at least* in the ranks.
3. Ten months' professional instruction at a War School.
4. Proof of professional knowledge afforded by passing the officers' examination.
5. Acceptance by the officers of the candidate's regiment.

Circumstances under which the two examinations are passed by various candidates.

The following statement, taken, with the necessary corrections, from the Report of the Commissioners of 1856, shows in a tabular form the circumstances under which the various classes of candidates are allowed to pass the two examinations, through which admission is obtained to the rank of officer;—

* Those in the second class (the Ober-prima) of the Cadet House can even pass the examination earlier, but they cannot be appointed officers until reaching the age of 17½.

The following Candidates offer themselves.	For the preliminary, Ensign's, or *Portepée-fähnrich* Examination (in all cases before the Supreme Board at Berlin).	For the Second, or Officers' Examination (before the Supreme Board).
Those nominated by colonels of regiments (*Avantageurs*), consisting of:	Before, after, or during (usually before) six months' service with the troops.	At a War School; after 10 months' military instruction there.
(*a.*) Ordinary candidates.		
(*b.*) Officers transferred from the Landwehr.	Do. do.	After six months' service with the troops; at Berlin, without attending a War School.
(*c.*) *Abiturienten* of a *Gymnasium* or first class *Real-Schule.*	Exempted - - -	After five months' service with the troops, and 10 months' military instruction at a War School.
(*d.*) Students of at least a year at a university.	Do. - - -	After six months' service with the troops; at Berlin, without attending a War School.
Those coming at the usual time from the Cadet House (from the class called *Prima*).	On quitting the Cadet House.	After five months' service with the troops and 10 months' instruction at a war school.
Those who stay an extra year in either of the two highest classes (the *Selecta* and *Oberprima*) of the Cadet House.	Before admission to either of these classes.	On quitting the Cadet House, after one year's military instruction in the *Selecta* or *Oberprima.*

Candidates for commissions in the artillery and engineers, after passing their officers' examination, have to serve with their regiments, the former for two years, the latter for one, and then to attend the Artillery and Engineer School; at the close of the course there they have to pass a further examination in subjects specially connected with the duties of the scientific corps.

THE CADET SCHOOLS OR CADET HOUSES.

(*Cadetten Häuser.*)

General Account of the Cadet Corps.

Cadet Houses not exclusively military schools.

"The actual military education of Prussia commences with the Cadet Houses, the schools intended for pupils before entering the army. They are divided into two classes, the junior, and the senior. They cannot, indeed, be called exclusively military schools, since the education which most of

their pupils receive is one which fits them for civil professions, and is not specially military; and there is no obligation even on those who have received the largest amount of pecuniary assistance to enter the military profession, when they leave the Cadet House."* They are, however, mainly intended to afford an education to the sons of officers in need of assistance, although they are also open to the sons of civilians; their organisation and system of discipline are military; a large number of officers of the army are employed in the instruction and superintendence of the pupils; the cadets wear uniform and are regularly drilled; and the two highest classes of the senior school at Berlin receive strictly military instruction for a year. A military spirit pervades the schools; preparation for the army is the predominating, though not the exclusive object of the course of training pursued at them; and the cadets in almost all cases enter the service. In fact, the institutions are avowedly intended to foster military *esprit de corps*, and to provide a nursery for officers of the army (*eine Pflanzschule für das Offizier-corps*). About one-third of the whole body of the officers are supplied by the Cadet Schools.

Though military in organization and spirit.

And mainly intended to be training schools for officers.

Organization of the Cadet Corps.

The various Cadet Houses, which are situated in different parts of the country, form as it were so many separate battalions, each divided into companies, and together constituting a single body, called the Royal Cadet Corps. This corps, originally instituted in 1717, was subsequently reorganised by Frederic the Great, who had himself been a member of it, and has always been an object of special interest with the sovereigns of Prussia. It is under the command of a general officer and has a special administrative staff of its own. All matters relating to the admission of candidates into the corps are regulated by a Commission of which the Inspector General of Military Education for the time being is president; and a single Board of Studies is charged with the general supervision of the course of instruction at the various institutions. In addition to a large number of civilian instructors, upwards of 100 officers of the army are employed in connexion with the Cadet Corps, of whom a certain number actually belong to the corps and wear its distinctive uniform, with the lace worn by the Guard in the time of Frederic the Great. To this number belong the general commanding the corps, his adjutant, the commandant of each Cadet House, the captains of companies and one first lieutenant in each company of the Berlin Cadet House. The remainder of the officers, who form the large

Its *cadre* of officers.

* Report of the Commissioners of 1856.

majority, are regimental officers attached to the corps. The distinction, however, between the two classes is more nominal than real; even the Cadet Corps officers do not permanently belong to it, but are periodically sent back to their regiments. The object of having them appears to be to maintain a *cadre* for the corps, and to encourage a military spirit among the cadets, by leading them to look upon the body to which they belong as a regularly organised force.

The Cadet Corps, like all other military establishments in Prussia, has been much enlarged since the war of 1866. The similar bodies which formerly existed in many of the separate states now forming part of the North German Confederation, have been merged with it. Saxony alone, as a special concession to the wishes of its sovereign, has been allowed to retain its old Cadet House at Dresden. This remains independent of the Prussian Cadet Corps, and contains 200 pupils, from which are supplied the cadets for the Saxon army—the 12th Army Corps of the North German Confederation. With this exception, there are now no independent Cadet Schools in North Germany, and even the Cadet Corps of Baden has been recently amalgamated with that of Prussia; the Cadet House at Carlsruhe was abolished at the commencement of 1868, and its members were transferred to the Prussian Cadet Corps on the 1st of May.*

Recent amalgamation of other North German Cadet Corps with that of Prussia.

The Cadet Houses are at present seven in number. They consist of six preparatory schools (*Voranstalten*), and one finishing institution to which the others lead. The six junior schools are situated in the provincial towns of Potsdam, Culm, Wahlstatt, Bensberg, Ploen (in Holstein), and Oranienstein (in Nassau); the two last, established since the late war, were only opened in May 1868. The senior school is at Berlin. At the junior schools, boys may be admitted at 10 and may remain till 15 or 16; at the upper school, the ordinary stay is from 15 or 16 to 18 or 19. No one, except by special permission of the King, is admitted to the corps after the age of 15. There is an examination on first admission to the corps, the subjects of which depend on the candidate's age; cadets who have passed through the course at one of the preparatory schools are transferred to the upper school at Berlin without further examination, being already members of the corps. Pupils below the age of 15 may also enter the Berlin school without previously attending a lower school, but in this case they have to undergo an exami-

Number of Cadet Houses.

* About 35 Baden cadets were thus transferred; the majority of them were admitted to the senior Cadet House at Berlin; the others joined one of the junior schools.

nation. The number of cadets who enter the upper school in this way is very small, not exceeding 15 or 20 in a year; and there is no wish on the part of the authorities to encourage this class of candidates, as it is considered that in their case one of the chief advantages claimed for the Cadet Corps is lost—that namely, of accustoming its members to military habits and discipline from their early boyhood. It is thought better that boys should complete their education at civil schools, and go into the army as *Avantageurs*, than enter the Cadet Corps at an advanced age.

Strength of the Cadet Corps.

The whole number of cadets is at the present time 1,557, of whom 507 are at Berlin, the remainder at the junior schools. The strength of the whole corps (exclusive of the civil staff and civilian instructors employed), is as follows:

General Staff { 1 Major-general, commanding the corps.
1 Adjutant.

	Military Officers.	Cadets.
Berlin cadet house	30	507
Potsdam	13	236
Culm	12 to 14	183
Wahlstatt	14	230
Bensberg	13	187
Ploen	10	110*
Oranienstein	10	104*
Total	100 to 105	1,557

Pensioners and King's cadets.

The cadets are of two kinds, the pensioners or paying pupils, and the King's cadets, who are educated mainly at the cost of the State. The former are at the present time 705 in number; the latter 852. The pensioners in ordinary cases pay 260 thalers (39*l.*) yearly, in which sum all expenses of instruction, board, clothing, washing, and books are included. The number of pensioners is limited only by the accommodation available after the admission of those entitled to King's cadetships. The number of the latter is fixed at 920. Cadets admitted to them are aided in various degrees according to the following scale:

Payments.

310 pay 30 ths. (4*l.* 10*s.* 0*d.*) yearly.
305 „ 60 „ (9*l.* 0*s.* 0*d.*) „
305 „ 100 „ (15*l.* 0*s.* 0*d.*) „

* These two schools, having been recently opened, are not yet at their full strength. The numbers at them will shortly be increased.

In very special cases of poverty payment can be entirely dispensed with, but this dispensation is rarely granted; at the present time there are only two "free cadets" in the whole corps. The ordinary payment of 260 ths. (39*l.*) required from pensioners may be reduced to 150 ths. (22*l.* 10*s.*) in the case of sons of officers actually serving in the active army, who, though not entitled to King's cadetships, are proved to be in poor circumstances. Foreigners are exceptionally admitted by the King's permission on payment of 360 ths. (54*l.*) yearly; and at the junior schools a few day scholars (*Hospitanten*) are received for 20 ths. (3*l.*) a year, if the classes are not too full. The Berlin school is already too crowded to admit of the reception of this class of pupils, who are generally sons of the officers and instructors at the schools.

King's cadets; conditions of their appointment.

The King's cadetships are granted, according to the pecuniary circumstances of the applicants, to the sons of officers of the standing army or Landwehr who have died on active service, or been invalided from wounds received—to the sons of meritorious officers of both forces who have retired on pensions or died in indigence—and to sons of officers actually serving in the standing army if proved to be in reduced circumstances. The sons of non-commissioned officers who have been killed or severely wounded in action, or who have served meritoriously for 25 years, and the sons of civilians who have performed special services towards the State in which personal danger was incurred, are also eligible. In point of fact, there are very few sons of non-commissioned officers among the King's cadets. Comparatively few non-commissioned officers serve long enough to fulfil the necessary conditions, it being a rule that the son must have been born during his father's period of active service. Moreover, there is apparently an indisposition to admit this class of candidates into the Cadet Corps; civil appointments are considered a more suitable reward for the sons of meritorious non-commissioned officers. The sons of civilians are rather more numerous; there are about eight among the King's cadets at Berlin; they are chiefly sons of people who did service to the government during the revolution of 1848, or who have distinguished themselves by saving life. Pensioners are admitted from all professions according to priority of application and the number of vacancies. The majority, however, appear to be the sons of officers, whose circumstances do not entitle them to King's cadetships.

Pensioners.

Annual expense of the Cadet Corps.

The total annual cost to the State of the seven Cadet Schools, after deducting the repayments from the pupils, is

given in the Budget for 1869 as 222,900 thalers (33,435*l.*) Of this rather more than one-third is absorbed by the senior school at Berlin; the annual expense of each of the provincial schools is on an average about 24,000 thalers (3,600*l.*). In addition to the ordinary annual expenses a sum of about 6,500*l.* is this year taken for the enlargement of the cadet institutions. It is estimated that the annual cost of the maintenance and instructions of a cadet at the junior schools is 250 thalers (37*l.* 10*s.*), and at Berlin 300 thalers (45*l.*), or an average of about 275 thalers (41*l.* 5*s.*) for the whole corps; so that even the pensioners scarcely pay sufficient to cover the expenses of their education.

Admission to the corps.

Admissions to the corps take place once a year, on the 1st of May. All candidates must at this date be between the ages of 10 and 15; they have to undergo a medical inspection at which any are rejected who are physically unfitted for military service; and they have to pass an examination, which, however, is not competitive, but is merely intended to prove that a candidate is sufficiently instructed to take his place in the class corresponding to his age. The examiners are appointed by the commandants of the various schools.

Classification of the cadets for purposes of instruction.

The six junior schools at Potsdam, Culm, Wahlstatt, Bensberg, Ploen, and Oranienstein, "are all divided for "purposes of instruction upon the same uniform plan into "four classes, numbered up from six to three—*Sexta* at the "bottom; *Quinta*, *Quarta*, and *Tertia* at the top."*

The upper school at Berlin succeeds with four more classes the second, first, upper first, and the special or select—*Secunda*, *Prima*, *Ober-prima*, and *Selecta*. "Each of these "classes, however, may contain any number of co-ordinate "sub-divisions, all taught the same subjects, and presumed "to contain pupils of the same capacity."* The general idea in all the Prussian military schools is, that no teacher can satisfactorily instruct more than 25 or at the outside 30 pupils at a time; and the system is almost universally adopted of splitting up each of the larger classes in which the pupils are distributed into small sections, called parallel-classes (*Parallel-klassen*), each of which is placed under the charge of a separate master.

System of small classes adopted for teaching.

The instruction in the lower classes is entirely unprofessional.

The course of instruction in the Cadet Schools from the sixth class (Sexta) up to the first (Prima) is the same as in an ordinary civil *Gymnasium*, with the exception that Greek is not taught. There are nominally fixed limits of age for each class, and a cadet on admission should be able to take his place

* Report of the Commissioners of 1856.

in the class corresponding to his age.* The ordinary period for remaining in each class is a year, and if a cadet at the end of that time is not fit for promotion to the next class, the rule is that he should be dismissed. This regulation, however, is not strictly enforced; cadets are frequently allowed to remain a second year in the same class. No one, however, can pass out of a class in a shorter time than a year; all must go through the uniform course; no such thing as "double removes" exists. The ordinary ages for the various classes, and the correspondence between the classes of the cadet corps and those of a *Gymnasium* are as follow:— Ages for the various classes.

Class in the Cadet Corps.	Age.	Corresponding class in a Gymnasium.
6th, Sexta	10 or 11	
5th, Quinta	11 or 12	5th, Quinta.
4th, Quarta	13	4th, Quarta.
3rd, Tertia	14	3rd, Tertia.
2nd, Secunda (at Berlin)	15	Lower second (Unter-secunda).
1st, Prima	16	Upper second (Ober-secunda).

In the two highest classes at the Berlin Cadet House, the Ober-prima and Selecta, the course of instruction is purely military and corresponds to that given at the War Schools.

In regard to general administration and instruction the Cadet Corps is subject to the Inspector General of Military Education; all reports, even on matters of finance, go through him to the Minister of War, and the selection of candidates for all appointments in connexion with the corps is subject to his approval. The more immediate control of the course of instruction is left in the hands of a Board of Studies, which consists of the general officer commanding the corps, as president, and three military and two civil members. The military members are the commandant of the Berlin Cadet House, a field officer of artillery, and a field officer of the general staff. The civilians are a delegate from the ministry of public worship, and the senior civilian professor of the Berlin Cadet House. A general control over the discipline is exercised by the general officer commanding the corps, but in regard to details the commandants of the various schools are left almost entirely independent. They have not, however, the power of dismissing cadets; this power in the case of pensioners rests with the general, in the case of King's

Government of the Cadet Corps.

The Board of Studies.

* The age of a cadet is calculated according to the Cadet Corps year, which extends from May to May.

cadets it belongs exclusively to the sovereign, on the principle that an appointment can only be forfeited by virtue of the same authority by which it has been conferred.

The Junior Cadet Schools.

Organization of the junior Cadet Schools.

The junior Cadet Houses are all organized on a uniform system. Each is under the command of a field officer; the cadets are distributed for purposes of instruction into the four classes already mentioned, and for purposes of discipline into two companies, each of which is commanded by a captain. Three or four lieutenants, and one or two civilians, who are generally candidates in theology, are attached to each company with the title of "tutors" (*Erzieher*), and live among the cadets. They all take a certain share in the instruction, being obliged to give a small number of lessons weekly; but their chief duties consist in looking after the pupils and assisting them in the preparation of their lessons. The instructors proper are partly civilians, partly military men, the former predominating. There are also a chaplain, an accountant, and two surgeons to each school. The number of cadets at most of the schools is on an average about 200, for whose superintendence and instruction a staff of 12 or 14 officers and from 7 to 9 civilians are employed. The usual age of the pupils on admission seems to be about 13; the oldest cadets at the junior schools are from 15 to 16.

Age of the cadets.

Subjects of instruction.

The subjects of instruction are Bible history, Latin, German grammar and composition, French, arithmetic, elementary algebra and geometry, ancient and modern history, the rudiments of natural philosophy, drawing, and writing. In the lowest classes these subjects are naturally taught in a very elementary manner, the course of study increasing in difficulty in the higher classes. In the two upper classes the cadets also receive some instruction in military drawing. All from the time of their first admission to the school are drilled and learn gymnastics, bayonet exercise, and dancing. There is no examination at the end of the course of instruction. Cadets who have been a year in the highest class of a junior school are as a matter of course transferred to Berlin, if their character and attainments are satisfactory. The system of discipline, which is uniform for the whole Cadet Corps, will be described in the account of the Berlin Cadet House. It may, however, here be remarked that though the discipline is in its general spirit military, the officers are especially directed to exercise a moral influence over the cadets, and, particularly at the junior schools, to trust more to admonitions and reproofs than to the infliction of punishments of a military

Discipline.

nature. The power of inflicting punishment at the junior schools rests only with the captains of companies and the commandant.

The Junior Cadet House at Potsdam.

The Cadet House at Potsdam, which was visited as a specimen of the junior schools, is rather larger than most of the others. It contains at present 236 pupils, of whom 133 are pensioners, and 103 King's cadets. The staff employed at the school is as follows:—

Establishment.

Discipline Officers.

1 field officer as commandant - -	1
1 captain to each company - -	2
4 lieutenants, as resident tutors (*Erzieher*), to each company - - -	8
2 civilian *Erzieher* to each company -	4
Total - - -	15

Instructors.

2 upper masters, civilians.
1 chaplain, who also acts as master.
2 military masters.
2 civilian do.

7 total.

The object of employing a certain number of civilians as resident tutors is said to be, that there may be some one constantly among the cadets who can help them in their Latin lessons, which it is supposed that an officer might not be able to do. The admixture of civilians is, however, in other respects considered disadvantageous; they are said to have more difficulty in enforcing their authority, although nominally they have the same powers as the lieutenants of companies.

The school buildings.

The Potsdam Cadet House occupies four or five buildings a little way out of the town. Each of the two companies has a range of buildings to itself, in which the cadets and company officers are lodged. The class rooms, dining hall, chapel, and other rooms common to the school occupy a distinct range. The day rooms and dormitories are separate from each other, and on different floors. The former are small rooms, plainly furnished, with about 10 pupils in each. Here the cadets pass their time during the day when not engaged in the classes or at drill, and prepare their lessons in the evening. Between every two rooms, and communicating

Day rooms.

with them by glass doors, is the quarter of one of the resident tutors (*Erzieher*), either a subaltern officer or a civilian, who thus keeps a supervision over the conduct of the cadets in the two rooms, and during the evening sees that they work at their lessons. The dormitories are on an upper floor and are not open to the cadets during the daytime. There are only two to each company, each containing, therefore, nearly 60 occupants. The cadets are here subjected to the same constant supervision as during the daytime; the tutors (officers as well as civilians) sleep in the dormitories with them, their beds being merely separated by a curtain from the others. The class rooms are on the usual Prussian plan, not arranged for lectures to large, but for lessons with small numbers; the average number of pupils attending a lesson together is about 25. The cadets all have their meals together in the large dining hall. There appeared to be no general reading room or recreation room of any sort; and there is, as in all foreign schools, almost an entire absence of any outdoor amusements, although there is a large playground behind the school buildings.

Dormitories.

Class rooms.

The cadets, as will be seen, are subject to constant supervision, and a strict control is kept over their conduct. At the same time a kindly manner of treatment is evidently adopted towards them, and great personal interest appears to be taken in them by the officers. Careful attention is also paid to their religious instruction, and the day's work invariably commences with chapel.

The Senior Cadet House.

General Organization.

The Upper Cadet House, which is situated in Berlin, affords the nearest approach which there is in Prussia to our military schools at Sandhurst and Woolwich; that is to say, there is a general similarity in the objects of the institution and the age of its pupils. The ordinary age of the cadets is from 15 or 16 to 18 or 19, and the main object of the institution is to afford them a certain amount of military training immediately before entering the army.

The Upper Cadet School at Berlin.

It is presumed that cadets of the age of 15 should be fit for promotion from the provincial institutions to the class of the Secunda at Berlin, and that at 16 they should be ready for admission to the Prima. No uniform rule, however, is observed on this point. A few are admitted to Berlin even below the age of 15, and on the other hand many are fully 16 when they join the school. The ordinary stay at the school is, in the majority of cases, two years—one year in the Secunda and a second

Usual age of the cadets on admission.

Duration of the course.

year in the Prima. About 70 of the best pupils, who are retained to go through a special course of military instruction in the Ober-prima or Selecta, pass a third year at the school.

Numbers at the school.

The school at present contains 507 cadets, divided into four companies of about 125 each. This strength, however, is not considered sufficient to meet the present wants of the service; and at the commencement of the ensuing school year it is intended to increase the number of cadets to 600, and to distribute them in six companies of 100 each.

Establishment.

The staff employed in the superintendence and instruction of the cadets consists of 30 military officers and 28 civilians, distributed as follows:—

Military Officers.

1 commandant, a lieutenant-colonel.
1 adjutant, a first lieutenant.
4 captains, commanding the companies.
16 subalterns, as resident tutors (*Erzieher*), four to each company.
8 military instructors.

Total 30

Civilians.

5 professors.
8 instructors.
1 writing master.
1 singing „
1 drawing „
1 fencing „
1 dancing „
2 resident tutors (*Erzieher*), candidates in theology, who also act as assistant chaplains.
8 assistant masters.

Total 28

There are also two chaplains—one Protestant and one Roman Catholic—and three surgeons. Each company has a quartermaster-sergeant, and there is a staff of 63 subordinate *employés*, consisting of clerks, housekeepers, porters, servants, and other attendants.

Annual expense.

The whole expenditure in connexion with the school for the last year was 157,000 ths. (23,550*l.*); of this sum

80,400 ths. (12,060*l.*), or rather more than one half, was paid by the State, the remainder being defrayed by the payments from the cadets.

Government.

The Berlin Cadet House is under the direct control of the general commanding the Cadet Corps, who resides in an adjoining building. The immediate superintendence of the instruction, discipline, and drill is in the hands of the commandant. There is no special director of studies, but the Board of Studies for the Cadet Corps exercises a general supervision over the studies, the system of instruction followed by the professors, and the progress of the pupils at the school; the senior civilian professor (who is a member of the board) is specially charged with the superintendence of the civilian instructors and with the general direction of the instruction in the subjects which are not military.

Superintendence of the cadets in the hands of company officers assisted by civilian tutors.

The charge of the cadets out of school hours devolves upon the captains and subalterns of companies, but principally upon the latter, who are constantly in contact with the cadets, and, as at the junior schools, have the title of tutor (*Erzieher*). They must be unmarried, and live among the cadets, though not in such close proximity to them as at the junior schools. The captains are in most cases married men, and have separate apartments by themselves in a distinct part of the school building. Each of the subalterns has under his special charge one section or "brigade" of the cadets of his company; and besides generally looking after them, he is supposed to give them assistance in the preparation of their studies. The subalterns are assisted, especially in this latter duty, by the two civilians, who are employed as *Erzieher*, and also live among the cadets. The instruction in drill, fencing, and gymnastics is in the hands of the company officers. In addition to their other duties, the subalterns and the civilian *Erzieher* are required to take a small share in the theoretical instruction of the cadets, being obliged to give at least two lessons each week. This rule does not apply to the captains, but they also frequently take part in the instruction.

Appointment of officers and instructors.

The recommendation of all officers and instructors for appointments is made by the commander of the Cadet Corps to the Inspector General of Education, who, if he approves of them, submits their names to the King or the Minister of War, as the case may be. The officers employed are in some cases men who have passed through the War Academy or senior department, but this is not a necessary condition. Various qualifications are sought for in selecting them; some are appointed because they have passed through the Central Gymnastic School, and are qualified as instructors in gym-

nastics. As a rule, however, they are represented as being men of considerable intellectual attainments. There is no fixed limit to the tenure of appointments either by officers or civilians, but the former after at the most six or seven years' employment at the school are generally sent back to do regimental duty for a time, though they are often subsequently reappointed. The civilian instructors are required to serve for a certain time on probation before being definitely appointed, but after this their appointments are permanent.

Salaries.

The officers employed receive a fixed addition to their regimental pay. The salaries of the civilians range from 1,500 ths. (225*l.*) a year, in the case of the senior professor, to 600 ths., (90*l.*) a year in the case of the junior instructor, all having in addition free lodging. For these sums, which are the regular salaries, a fixed number of lessons of an hour each must be given weekly—10 by the senior professor, 14 by the other civil professors, eight by the junior instructors. All are, however, allowed to give a larger number of lessons, and receive for these an increase to their salaries or *honorarium* of 32 ths. (4*l.* 16*s.*) a year for each extra lesson given per week. The maximum number of weekly lessons which an individual is permitted to give is 24, the number ordinarily given is about 22. The same rule applies to the military officers; 14 lessons a week must be given by the instructors, and two by the subalterns of companies for their ordinary salaries. The commandant of the school seemed to think that all the appointments were well paid considering the ordinary rate of pay in Prussia; and the post of a captain of a company was spoken of as being a particularly desirable one to hold.

The School Buildings.

The school buildings.

The Cadet House is situated in the *Friederichs Strasse*, in the older part of Berlin. The buildings are partly those originally erected by Frederic the Great, and though numerous modern additions have been made, the accommodation is no longer sufficient for the number of cadets now required. The situation is also objectionable in a sanitary point of view, as the school is closely surrounded by houses, and it is intended shortly to move the establishment to a more open and airy situation in the neigbourhood of the *Thiergarten*. The main part of the buildings consists of a large quadrangle, in which are situated the quarters of the cadets and company officers, the dining hall, library, and a large hall called the Hall of the Field Marshals, which is used on state occasions, and also serves the purpose of an examination room. Beyond the quadrangle is a large court-yard, which is used for drill and

exercise; on one side of this stands a range of buildings containing the class-rooms and the mess establishment of the officers employed at the school; on the other side are the lodgings of the professors and instructors. The residences of the general commanding the Cadet Corps and of the commandant of the school are immediately adjoining.

The quarters of the cadets.

The quarters occupied by the cadets consist of a sitting-room and bedroom, opening into each other, which are shared by a number of occupants, varying from six to 14 or 15. The smallest number thus lodged together is six, the usual number eight or 10; but, owing to the deficiency of accommodation, the cadets are at present more crowded than is thought desirable. The bedrooms contain merely iron barrack bedsteads, and a narrow table running down the centre of the room, which holds a washing basin for every occupant. In the sitting-rooms each cadet has a desk and cupboard to himself, in which to keep his books and other property; a table and chairs complete the furniture, which is of the plainest description.

The dining hall.

Messing.

The dining-hall is a large handsome room, capable of accommodating the whole of the 500 cadets. They all take their meals here in common. Three regular meals are given during the day—breakfast, consisting merely of soup and bread, on getting up, dinner in the middle of the day, and supper shortly before bed time. In addition, in the course of the morning, a piece of bread and butter is served out to each cadet for lunch. The dining hall was visited during the dinner hour. The cadets were distributed at small tables, each of which held 12, a senior sitting at each end. They appeared a smart, soldier-like and gentlemanly-looking set of young men; their average age seemed to be from 16 to 18; viewed as a body there was apparently more uniformity of age among them than is the case among the cadets at Sandhurst. A good plain dinner was provided, consisting of soup, a limited quantity of meat, and as much vegetables as wished. Pudding is given as an extra on Sundays. Water is the only beverage allowed, but the commandant appeared to regret that beer was not supplied. The general arrangements for dinner showed considerable regard to the comfort of the cadets, and the conduct of the latter was most orderly. They are marched to their meals by companies, under the charge of their officers, and one officer remains on duty in the dining hall during the meal time. There is a sort of *buffet* attached to each company, where at other times the cadets can purchase coffee, fruit, and confectionery. Neither beer nor wine, however, are allowed at any time within the school buildings.

The library.

The school possesses a good library, but the use of it is confined to the officers and the senior cadets in the Selecta or

highest class; the others are not allowed either to frequent the room or to obtain books from it. There is, however, a smaller library for each company, under the charge of the the captain, containing novels and works of general literature, any of which can be taken out. There is no general reading room in the school where newspapers or periodicals are supplied, but the occupants of each room generally subscribe to take in a newspaper. The only general room of any sort is one in each company, called the Company Room (*Compagniesaal*), a large room, quite plainly furnished, and supplied with no games or means of amusement. The cadets of each company generally join together to hire a piano for this room. Music and novel reading appear to be the most favourite recreations during the leisure hours. The only outdoor amusement seems to be gymnastics; in addition to a covered gymnasium, where regular instruction is given under the superintendence of an officer, gymnastic apparatus is provided in the court-yard, which the cadets are allowed to use during their free time. The opportunities even for ordinary exercise are very small, as, except on special occasions, the cadets are not allowed to go outside the school, and the interior space is extemely limited.

Recreation rooms.

Amusements.

Course and Method of Instruction.

For purposes of instruction the school is divided into four classes, the Secunda, Prima, Ober-prima, and Selecta, the cadets in each being called *Secundaner*, *Primaner*, *Oberprimaner*, and *Selectaner*. The Ober-prima is a class recently introduced, mainly for cadets who are too young to enter the army directly as officers on quitting the school, as those do who are admitted to the Selecta. The instruction given to both classes, however, is the same, and is exclusively military. The studies in the Secunda and Prima are of the same general character as in the junior Cadet Houses. The pupils in the Selecta generally amount to about 10 per cent. of the cadets, or 50 in all with the present strength of the school. The Ober-prima at present contains 18. In each of the two lower classes there are upwards of 200 pupils. The ordinary ages in the various classes are 15, 16 in the Secunda, 16, 17 in the Prima and Ober-prima, and as far as 19 in the Selecta. Some of the cadets are even said to be upwards of 20; but the cases of those who are under 15 or over 19 are both exceptional.

The cadets arranged in four classes.

Numbers in the various classes.

Ages.

The course of studies for the whole of each class is uniform; but with the exception of the Ober-prima each is divided for attendance at lessons, on the usual Prussian plan, into smaller

Subdivision of the classes for instruction.

" parallel classes " numbering at the outside 30 pupils. The Selecta is thus divided into two sections, and the Prima and Secunda into eight each.

Subjects of study in the lower classes.

The subjects taught in the two lower classes are as follows:

In the Secunda.

Religious instruction.
Latin: Quintus Curtius and Ovid's Metamorphoses.
German composition and literature.
French.
Mathematics: plane geometry, and algebra from square root up to quadratic equations.
Modern history with special reference to that of Prussia.
Geography of Europe, and mathematical and physical geography.
Physical science: mechanics.
Military drawing.
Landscape drawing (voluntary).
Writing, only for those who are bad writers.

In the Prima.

Religious instruction.
Latin: Livy and Ovid.
German composition and literature continued.
French.
Mathematics: algebraical progressions and series, use of logarithms, application of algebra to geometry, plane trigonometry, elements of solid geometry.
History of Germany, and general *résumé* of ancient and modern history.
Geography: general recapitulation of the subjects taught in the lower classes.
Physical science: heat, electricity, magnetism, sound, and light.
Military drawing.
Landscape drawing (voluntary).

In addition to the above subjects, elementary instruction is also given to the cadets in the Secunda and Prima in what is termed *Diensthenntniss*, or knowledge of military duties. This, however, for these junior classes is confined mainly to instruction as to the mode of behaviour towards officers and similar points of military etiquette. With this exception and that of topographical drawing there are no military studies for the *Secundaner* or *Primaner*. The instruction given in the Prima is especially intended to prepare the cadets for the *Portepée-fähnrich* examination, which takes place at the end of the year spent in this class.

With the course in the Prima the *general* education of the cadets ceases. The instruction in the Ober-prima and Selecta is intended as a preparation for the officers' examination, and is strictly military. The subjects taught in these classes are:— Professional studies in the two highest classes.

Science of arms (*Waffenlehre*), consisting of a description of the various kinds of guns, small arms, ammunition, and other *matériel* of war in use in the service,

Tactics.

Fortification.

Military drawing, under which are comprised hill sketching, drawing of plans from verbal descriptions supplied, from copies, and from models of ground; the reduction of plans to smaller scales; and plotting surveys which have been made on the ground.

Topography and surveying, consisting of theoretical instruction in the influence of ground on military operations; instruction in the mode of conducting surveys and reconnaissances, and in the use of the instruments ordinarily employed; and, during a portion of the course, practice in actual surveying on the ground.

Instruction in military duties (*Dienst-instruction*), comprising military law and regulations.

Military correspondence (*Militairischer Styl*), or instruction in the mode of preparing returns, writing military reports, &c.*

The above subjects are the same as those taught at the War Schools and are all obligatory. There is in addition a course of mathematics (comprising solid geometry and spherical trigonometry), attendance at which, however, is voluntary for all except cadets intended for the artillery or engineers. Formerly various other subjects were taught in the Selecta and Ober-prima, such as German literature and philosophy, French, English, and chemistry; these studies, however, have been gradually abandoned from a wish to make the course of instruction more strictly professional, and to assimilate it to that at the War Schools. The course of study is the same as that at the War Schools.

French is the only modern language taught at the school, and even this is not taught in the Ober-prima and Selecta. A few of the cadets, however, take private lessons in English. There is a singing master at the school, but attendance at the classes is optional. Dancing, however, is a compulsory

* The nature of the instruction in these subjects is more fully detailed in the accounts of the War Schools, with the course at which that in the Ober-prima and Selecta of the Cadet House corresponds.

subject in the Secunda, as it is for all the cadets at the junior schools. It appears to be regarded in Prussia both as a kind of gymnastic exercise and as a necessary accomplishment for an officer; and the cadets with whom it is compulsory are required to exhibit their proficiency in it before the general commanding the corps on the occasion of his periodical inspections of the school. The higher classes above the Secunda are not required to attend the dancing lessons.

Time given to the various subjects.

The time devoted to the various lessons in the respective classes is approximately as follows*:—

—	In the Secunda.	In the Prima.
Religious instruction	2 hours weekly.	1 hour weekly.
Latin	6 „ „	5 hours „
German	3 „ „	3 „ „
French	4 „ „	4 „ „
Mathematics	6 „ „	6 „ „
History	2 „ „	4 „ „
Geography	3 „ „	3 „ „
Physical science	2 „ „	2 „ „
Drawing	2 „ „	2 „ „
Writing	2 „ „	0 „ „
Instruction in military duty	1 „ „	1 „ „
Total	33 hours weekly.	31 hours weekly.

In the Ober-Prima and Selecta.

Obligatory Subjects.	Time occupied.	Voluntary Subjects.
Science of arms	5 hours weekly.	Mathematics two hours weekly. N.B.—This is an obligatory subject for cadets going into the Artillery or Engineers.
Tactics	7 „ „	
Fortification	7 „ „	
Instruction in military duties and regulations, and in military composition (*Diensthenntniss* and *Militairischer Styl*).	3 „ „	
Military drawing	2 „ „	
Topography and surveying	3 „ „	
Total	27 hours weekly.	2 hours weekly.

Four weeks during the year, in the month of August, are with the Ober-prima and Selecta entirely given up to practice in surveying; the out-door work is done on the ground during the morning, and the afternoon is spent in plotting at home. The lower classes have no practice in drawing on the ground.

* Detailed tables of the employment of time in the various classes are given in the Appendix, page 536.

The practical exercises comprise :— Practical exercises.

Battalion drill for the whole school, about twice a week in fine weather. The cadets are exercised in all the movements of a battalion of the line, the pupils of the Selecta being made to act as subaltern officers. In addition to these regular drills there are ordinary daily parades within the school.

Gymnastics and bayonet exercise for all the cadets, two hours a week.

Fencing and sword exercise, two hours a week, for all except the Secunda, in whose case dancing is taught instead.

Swimming, instruction in which is given only during the summer months, but is obligatory for all the cadets.

Riding, taught only to the pupils in the Selecta. There is no riding-school attached to the Cadet House, but the *Selectaner* are taken twice a week to the King's riding school.

The time devoted to these practical exercises is on an average from two to three hours daily for the cadets in the Selecta ; in the lower classes it is less, and in the Secunda it does not appear to amount to much more than an hour a day.

The instruction in the purely military subjects, including topographical drawing, is given exclusively by officers ; but officers are also employed, in addition to civilians, as instructors in many of the other subjects, such as mathematics, geography, and physical science. Indeed, the instruction in the latter subject is exclusively under the charge of an officer. French, however, is taught entirely by French masters. As already stated an instructor has only a small class under his charge. The class-rooms are small rooms, intended to accommodate about 30 pupils, the largest number in a single class. The rooms are fitted with rows of parallel desks, at which the cadets sit ; the instructor occupies a raised dais at one end of the room, and near him is a black board, which is frequently used during the lessons. Each lesson lasts an hour. The regulations of the school direct that at the beginning of every lesson individual pupils should be questioned on the subject of the last lesson ; in addition to this, about once a fortnight, the whole hour is devoted to a general *vivâ voce* examination of the class. Notice of these examinations (*Extemporalien*) is given beforehand, and certain subjects are set, which the pupils are expected to prepare.

Officers employed as instructors even in non-military subjects.

Method of instruction.

Vivâ voce examinations are an important element in the system.

In all the classes subjects for exercises and themes are frequently given, which the cadets are required to do out of

Written exercises.

study, and which are afterwards corrected by the masters. The actual hour of lesson is employed solely in instruction and examination; the pupils prepare for it by themselves. Half an hour in the morning and two hours and a half in the evening are set apart for this purpose; during this time the cadets are required to employ themselves in private study (*Arbeitstunde*) in their own rooms, which are visited from time to time by the subalterns on duty to see that all are properly occupied. One of these officers, as well as one of the civilian *Erzieher*, is always at hand to give assistance or answer questions. It is a rule that the course of instruction in each subject should be completed at least a month before the end of the school year, the remainder of the time being given up to a general revision and repetition of the subject.

Private study.

The lessons in the class rooms.

By the kindness of the commandant permission was granted to visit several of the classes during the hours of lesson. A class of the Secunda was found at mathematics under the instruction of an officer, the subject being quadratic equations; individual pupils were called out and made to work equations on the black board. A more advanced class in mathematics, a section of the Prima, had lately commenced trigonometry, and were being questioned in the elementary formulæ. A class in physical geography was visited at the commencement of the lesson, when the instructor, an officer, called upon various pupils to explain, by the aid of diagrams on the black board, the subject of the previous lesson on the planetary system. In another room an officer was engaged in lecturing on natural science; there was in this room a good collection of electrical and other scientific apparatus for the purpose of illustrating the lessons, but the cadets do not appear to be themselves required to execute practical manipulations. In a French class the professor read aloud the German translation of a French passage which had been set to the pupils to prepare, and the latter (who belonged to the Prima) were called up one by one to retranslate the successive sentences into French. Practice in French conversation is also occasionally afforded, but the professor stated that very few of the cadets on leaving the school are able to talk the language well, and he appeared to think that too little importance is attached to the *vivâ voce* examination in the subject. A class of the Secunda was found engaged in military drawing under an officer. The pupils were in various stages of progress; some were merely commencing to draw *hachures*, according to the scale of shade commonly used; others were making copies of drawings and plans. Some in a more advanced stage were

drawing from models of hill-ground very carefully executed in plaster. On these models the contour lines are traced, from which the pupils are required to calculate the slope, and to represent it accurately according to the scale of shade. Vertical *hachures*, as in the French schools, are exclusively used, differing not only in thickness but also in form, according to the slope to be represented. Many of the drawings of the more advanced students were executed with great care and neatness. A class of the Selecta in the science of arms (*Waffenlehre*), and of the Ober-prima in tactics (both under officers), were also visited. In the former the instructor was engaged in explaining the construction of a gun-carriage and limber; in the latter a few elementary principles of tactics were pointed out to the pupils.

General remarks upon the teaching.

The number of pupils in a class varied from 23 to 28, except in that of the Ober-prima, which was considerably smaller. A pupil when questioned stood up to give his answer, and if he failed another was called upon, but there was no taking of places. All the cadets had note-books, and many were occupied in taking notes, but this appears to be done purely for their own information; the notes taken have not, as in the French schools, to be produced to the instructors. The instruction given in the classes of the Selecta and Ober-prima seemed to partake much more of the character of professorial lectures than in the lower classes, though there is even in this case also a considerable admixture of questioning of individual pupils. The cadets appeared generally attentive to the instruction; no officer is present at the lessons of the civilian instructors; the latter are said to have no more difficulty in maintaining order or securing attention than the military teachers. There appears to be no disposition to respect them less than the officers; indeed, notwithstanding the general military spirit of the school, the remark was made that the cadets in general respect an instructor "not for what he wears, but for what he knows."

Daily routine.

The routine of the day's work is as follows: — The cadets rise at half-past 5 in summer, and 6 in winter; 20 minutes afterwards they turn out of their rooms, form on parade, and are marched to breakfast. Half an hour's private study in their rooms (*Arbeitstunde*) follows, to look over the lessons for the day. A short time is then given for cleaning their arms and accoutrements preparatory to the morning roll-call, at which a most minute inspection of each company is made by the captain, and any cadet found with his things imperfectly cleaned is punished. Prayers for the whole school in the chapel succeed the roll-

call. Lessons begin at 8, and generally continue until 1, with an interval of 20 minutes at 11 for lunch. At 1 all the cadets fall in by companies on parade, when the daily orders are read, and other routine business is transacted. At half-past 1 they are marched to dinner. The actual lessons in the class-rooms are in general, except for the Selecta and Ober-prima, finished by 1 o'clock, the afternoon being chiefly employed in such subjects as singing, dancing, fencing, and gymnastics. Each day except Wednesdays and Saturdays some of the cadets attend the classes in these subjects from a quarter to 3 to half-past 5; those of the Selecta and Ober-prima have also on some days theoretical instruction during the afternoon. Wednesdays and Saturdays are nominally half-holidays, but the only difference between these and other days appears to be that the afternoon is employed in battalion drill, for which the cadets are marched out to a drill ground at some distance. From half-past 5 to 8 every evening all the cadets are obliged to occupy the time in study of their lessons in their own rooms (*Arbeitstunde*); at 8 supper takes place, after which they have about three quarters of an hour to themselves until half-past 9, when they go to bed; at 10 all lights are put out.

Free time during the day.

Except with the Selecta and Ober-prima the whole afternoon is seldom completely occupied; but owing to the absence of manly games much of the leisure time appears to be thrown away as far as healthy recreation goes. For an hour each afternoon—between half-past 4 and half-past 5—all the cadets who are not employed are obliged to go down into the court-yard to take exercise; but their main occupation when there appears to consist merely in walking up and down.

Sunday occupations.

On Sundays one company is marched to the garrison church; the remainder attend service in the school chapel. Dinner takes place at 12, to give more free time in the afternoon to those who obtain the privilege of leave. The cadets have the greater part of the day to themselves, but even then are not allowed to go outside the school without permission. On Sunday afternoons they are sometimes taken under the charge of the officers to visit places of interest in the neighbourhood of Berlin, and are also on one or two occasions during the year taken to the opera or theatre, at which free admissions are granted them.

Vacations.

The school year commences on the 1st of May; the holidays consist of four weeks in July, a fortnight at Christmas, 10 days at Easter, and three days at Whitsuntide —or in all about two months in the course of the year.

Discipline.

The cadets are not actually subject to military law, but the discipline maintained and the punishments inflicted are in general of a military character. The maintenance of discipline, under the commandant, rests with the captains and subalterns of companies. The instructors have nothing to do with the discipline, and indeed are not brought into contact with the cadets out of study hours. Even during lessons they have no power of inflicting punishment, but are required to report misconduct to the captains of companies. Military and civilian instructors are on the same footing in this respect. Even among the officers specially charged with the maintenance of discipline, the power of punishment is almost entirely confined to the captains, the authority of the subalterns being restricted to giving reprimands and very minor penalties. In extreme cases the latter are allowed to place a cadet under arrest, not, however, as a punishment, but as a preliminary to his offence being inquired into by the captain, to whom a report of the case must immediately be made.

The instructors have no powers in regard to discipline.

The subaltern officers have only limited power of punishment.

The officers are considerably assisted in the preservation of discipline by the senior cadets. The four companies into which the school is divided contain respectively an equal proportion of each of the four classes. The cadets of the highest class, the Selecta, who have already passed the examination for the rank of *Portepée-fähnrich*, are invested with the authority of under officers; only a few of them, however, are at first allowed to wear the silver sword-knot which is the distinctive badge of the rank of *Fähnrich;* the others are gradually promoted to this distinction according to their conduct. There are about 12 under officers in each company; the senior bears the title of head of the company (*Compagnie-führer*), and has certain privileges and exercises some authority over the others. Besides the under officers, who are almost exclusively taken from the Selecta, there are in each company a number of corporals (*Gefreiten*); a cadet in the Ober-prima is as a matter of course a corporal unless there is anything against his character; the remainder of the corporals are selected from the cadets of the Prima and are appointed mainly on account of good conduct, but partly also on the ground of industry in their studies. A cadet of the lowest class, the Secunda, is never made a corporal. In each of the living-rooms occupied by the cadets, there are one under officer and one corporal, who act as seniors of the room (*Stubenmeister*), and are responsible for order; during the *Arbeitstunde*, or time assigned to private study, they are also required to see that the cadets occupy

The senior cadets assist in maintaining discipline.

Their various ranks.

Under officers.

Corporals.

Influence exercised by the senior cadets.

themselves with the preparation of their lessons. The under officers have no power of inflicting punishment; they can merely report misconduct to an officer. They appear, however, to have considerable influence over the other cadets, and to have little difficulty in securing obedience; it is known that punishment will invariably follow on any report made by them. Their authority is said to be further increased by the strong feeling of *Cameradschaft* which exists in the Cadet Corps; it would be considered "uncomrade-like" in a junior cadet to refuse to obey an under officer. Even the cadets of the Prima appear to exercise a sort of authority over those of the Secunda, which is something like a system of fagging, though not actually recognized. There appears, however, to be an entire absence of bullying in the school. Both under officers and corporals are liable to be reduced to the ranks for misconduct, but in the case of the former the punishment can only be inflicted by the general commanding the corps.

The system of conduct classes.

The distinguishing feature of the arrangements with regard to discipline is the system of *Censurklassen*, or conduct classes, in which the cadets are distributed, and on their position in which their privileges in regard to leave depend. These classes are four in number, and are quite independent of the ordinary classes of the school. A cadet, on first joining the school, is placed in the third *Censur* class; while he remains in this leave is only granted to him on Sunday afternoons, and to obtain it he must produce an invitation from some of his friends known to the authorities of the school. He is required to be in by half-past 9 at night, and must bring back with him a certificate, stating that he has been during the whole time in the company of the friend by whom the invitation was given. After a time a cadet can, by good conduct, obtain promotion to the second class, in which he can obtain leave on Sundays, and occasionally also on other days, until 10 at night, and can spend his leave where he pleases, not being required to bring back any certificate with him; this latter privilege appears to be highly prized by the cadets. No one below the second *Censur* class can be appointed a corporal. The first class is almost entirely limited to the cadets of the Selecta and Ober-prima; it is quite exceptional for any others to be placed in it. Those in this class are allowed more ample privileges—they can obtain leave on any day during the hours not occupied by studies; it is always granted to them when they ask for it without any reasons being assigned, and they may remain out until half-past 10 at night. The fourth *Censur* class is reserved for cadets who have been guilty of serious misconduct or of

Privileges of the first conduct class.

Degradation to the fourth conduct class.

moral offences, and degradation to it is looked upon both as a great disgrace and as a severe punishment. Those in it are constantly confined within the walls; they cannot obtain leave even on Sundays, and on this day they generally have punishment study (*Strafarbeitstunde*). Moreover, a cadet who, at the end of his career at the school, was found in the fourth *Censur* class, would only be allowed to enter the army as a private soldier instead of as a *Portepée-fähnrich*. Degradation to the fourth *Censur* class is a very rare occurrence. At the time the school was visited (in October 1868) there were no cadets in it; in the previous year there had been four.

Quarterly reports furnished of the cadets' conduct and progress.

At the end of each quarter reports are sent in by the professors of the progress and attainments of the various pupils. From these periodical reports by the professors, and from their own knowledge of the cadets, the captains of companies make reports which describe the conduct of each individual under the heads of behaviour (*Aufführung*), diligence (*Fleiss*), and progress (*Fortschritte*). These reports are sent to the cadets' parents, and on them is mainly founded the distribution of the cadets in the *Censur* classes, which is made by the commandant, on the recommendation of the captains. The distribution mainly depends upon general conduct, but to a certain extent also on diligence and progress in study. A cadet who was reported as idle by the instructors would not be promoted to a higher *Censur* class. As a rule the promotion of a cadet from the third to the second *Censur* class does not take place until six months after his admission to the school, by which time two quarterly reports have been made upon his conduct, and a tolerably correct estimate can be formed of his character.

Minor punishments.

The minor punishments ordinarily inflicted consist of:—

Reprimands, either in private or before the company to which the offender belongs.

Punishment parade (*Starfmeldmung*), which consists in a cadet being obliged to report himself, generally in full uniform, to the officer on duty at fixed times during the recreation hours.

Extra turns of daily duty (*Straf du jour*), a certain number of cadets in each company being on duty every day as orderlies, &c.

Punishment study (*Strafarbeitstunde*), either on week days during recreation hours, or on Sundays.

Curtailment of leave of absence on Sundays and holidays. A cadet thus punished is obliged to come in two hours earlier than the others on leave.

Power of inflicting them.

Even in regard to these minor punishments the power of the subaltern officers is restricted to administering reprimands in private, and to inflicting at the most two punishment parades. The other punishments can only be inflicted by the officer commanding the company.*

More serious punishments.

More serious punishments, which it is still, however, within the power of the captains to inflict, are :—

Complete forfeiture of leave on Sundays and holidays, accompanied with punishment study.
Forfeiture of the privileges of the first or second *Censur* class for a period of a month.
Reduction from the second to the third *Censur* class.
Arrest in quarters (*Stuben-arrest*) for three days, which obliges a cadet to remain in his own room during recreation hours. This arrest is supposed to be on honour, but does not appear to be very strictly kept.
Close arrest in confinement (*Compagnie-arrest*) for three days; a cadet sentenced to this is liable, according to the nature of his offence, to be kept on bread and water.

The most severe punishments, which can only be inflicted by the higher authorities, are :—

Forfeiture of a portion of the vacations.
Close arrest of a more severe character (*Corps-arrest*) up to five days.
Reduction from the third to the fourth *Censur* class.
Temporary suspension of an under officer or corporal.
Reduction to the ranks in the same cases.
Dismissal from the Cadet Corps.

Power of inflicting these.

The two last punishments can only be inflicted by the general commanding the corps, and, as already observed, his power of dismissal is limited to the case of pensioners. The right of inflicting the other punishments rests with the commandant of the school. The punishments which can be inflicted on the *Selectaner* are the same in general character as those for the other cadets; except that those upon whom the distinction of wearing the ensign's sword-knot has been conferred, are exempt from any arrest but that in their own rooms.*

Defaulter books.

All punishments inflicted are entered in a defaulter book kept by the captain of the company, which at the end of each

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* In the junior schools no power of inflicting punishment at all appears to be exercised by the subalterns. The punishments at these schools also include loss of pocket money and deprivation of a portion of the evening meal. But these punishments are not inflicted in the senior school at Berlin.

† A translation of the regulations with regard to the system of discipline for the Cadet Corps will be found in the Appendix, page 539.

month is produced to the commandant. The entries in the defaulter books are taken into consideration in determining the quarterly reports of the conduct of the cadets, and therefore also their distribution in the *Censur* classes. A cadet has a right of appeal to the commandant against the sentence of his captain, but he cannot appeal until after having done his punishment; if the appeal is considered well founded the entry is erased from the defaulter book; if not, the punishment is doubled.

Minor regulations.

From the account of the system of discipline, and of the daily routine at the school, it will be seen that the cadets are subject to an extremely strict *régime*. Leave to go outside the buildings, except to the few pupils in the Selecta, is granted rarely, and in most cases under considerable restrictions. Within the school all are subject to the constant supervision of the *Erzieher;* neither wine nor beer are allowed even at meals, and except when on leave a cadet has no means of obtaining liquor. Smoking is strictly prohibited both within and without the school. Any immorality or association with improper characters when on leave is, if discovered, punished with dismissal even in the case of the older cadets of the Selecta. In minor matters the rules are equally strict; no watches, rings, or other jewellery are allowed to be worn; a fixed sum of pocket money only is allowed to each cadet, amounting to 3 thalers (9*s.*) a month for those in the Selecta, and 2 thalers (6*s.*) for those in the lower classes. A small addition to this is made out of the King's private purse (*Königliche Zulage*), which, however, in ordinary cases only amounts to 5 groschen (6*d.*) a month, and even in the case of the senior under officers is only 25 groschen (2*s.* 6*d.*). The largest sum of money, therefore, which even the most privileged cadet has at his disposal is 11*s.* 6*d.* a month, and out of this he has to pay for any breakages or extra washing. Every precaution is adopted to prevent the possession of larger sums of money, and all letters received by cadets have to be opened in the presence of an officer, who sees that they contain no remittances. The most scrupulous neatness in regard to dress is enforced, and when on leave the cadets are always required to appear in public properly dressed in uniform and wearing their belts and gloves. Indeed the *esprit de corps* of the school appears to be sufficient to prevent irregularities in this respect; smartness of dress is looked upon as distinguishing the cadet from the common soldier; it was remarked, for instance, that anyone seen in public without his gloves, or with his belt improperly put on, would be severely "chaffed" by his comrades.

Interest taken in the cadets by the officers.

Notwithstanding the strictness of the discipline it appears to be administered in a kindly manner; the officers mix a good deal with the cadets during their free hours, visit them in their rooms, and exhibit considerable interest in them individually. In fact, as their name of *Erzieher* implies, they occupy to the cadets of their respective companies a position in many respects similar to that of a private tutor at an English public school towards his pupils. The cadets on admission to the school are told "to look upon the senior "officers in the light of parents, and upon the junior officers "as elder brothers." The restrictions, with the single exception of the privileges in regard to leave which are obtained in the first and second *Censur* classes, are the same for all; yet strict as the regulations seem to be for young men of the age of 18 or 19, no difficulty is found in securing obedience to them. Such an offence as insubordination appears to be unknown, and instances of dismissal are very rare. The ease in maintaining discipline is ascribed partly to the early age from which the cadets have been accustomed to habits of military obedience; partly to the system of *Censur* classes, which is looked upon as a great incentive to good conduct; and to a great extent also to the fact that behaviour at the school affects, almost to an equal degree with educational attainments, a cadet's admission to the army. Good or bad conduct may make the difference whether a young man enters the service with the rank of officer or as a private soldier. Moreover, on leaving the school, a report in minute detail of the conduct of each cadet, termed his "*Cursum Vitæ*" is forwarded to the regiment to which he is appointed; and most are said to feel that their future professional prospects are to a considerable extent dependent on their conduct while at the Cadet House. A powerful assistant in the preservation of discipline is also afforded by the strong *esprit de corps* which pervades the cadets themselves, and which is one of the most remarkable features of the school. Every cadet feels a pride in the body to which he belongs, and in its distinctive privilege of taking precedence of all other troops when marching past the sovereign; he glories in the hereditary traditions and historical associations of the school, and regards almost with veneration the colours of the corps—the same which were carried when Frederic the Great was a member of it, and which still bear the initials of the "Great King" stamped upon their staff.

Ease in maintaining discipline.

Effect of conduct at the school on a cadet's future prospects.

Strong *esprit de corps* among the cadets.

Examinations and Admission to the Army.

Promotion from the Secunda to the Prima.

The length of the usual course in the Secunda and Prima is a year in each class. There is no examination at the end

of the year in the Secunda. Promotion from this class to the Prima is determined by the quarterly reports, or *Censurs*, which are furnished by the instructors regarding each cadet. These reports are given in the usual form of *predicates* to which a numerical value is attached. In each subject a predicate is assigned to every cadet under the different heads of attention (*Aufmerksamkeit*), diligence (*Fleiss*), abilities (*Fähigkeiten*), and knowledge (*Kentniss*). These predicates appear to be given more according to the general estimate formed by the instructor of a cadet's attainments, than by attaching any fixed value to his exercises and answers to questions. Strict rules, however, are laid down for the guidance of the instructors in assigning their predicates, and the various points which should be taken into consideration are detailed at great length, in order to establish uniformity of system. The quarterly *Censurs* thus given are sent in to the captains of companies, and copied into a book; and from these, at the end of the year, the general predicate to which a pupil is entitled in each subject is determined by a Board, consisting of the commandant and company officers, who decide whether the cadet is fit for promotion to the Prima. The general rule, though not strictly enforced, is that the predicate of "satisfactory" (*befriedigend*) should be obtained in each subject as a qualification for promotion.

Examination at the end of the course in the Prima.

At the end of the year in the Prima it is considered that the cadets should be fitted for ordinary admission to the army. They are first subjected to a preliminary examination by the authorities of the school, and those who are found qualified in this ordeal are sent up for examination before the Supreme Military Examination Commission, the members of which are entirely unconnected with the Cadet House. The subjects in which they are examined are the ordinary subjects of the *Portepée-fähnrich* examination, for which the course in the Prima is preparatory. The examination is identical with, and is conducted exactly in the same way as that of the *Avantageurs* who enter the army without passing through the Cadet Corps, except that it is held at the Cadet House. The cadets who reach the ordinary standard of qualification in this examination are admitted at once to the army as "ensigns designate" (*charakterisirte Fähnriche*); they join with the acting rank of ensign, and thus escape doing duty as privates; but in other respects they are in the same position as the *Avantageurs* admitted on the nomination of the colonel of a regiment; they must serve with the regiment for six months, and be of the age of $17\frac{1}{2}$, before they can obtain the patent which confers the actual rank

Rules of entrance into the army: 1. The cadets who go from the Prima.

of *Fähnrich;* they attend a War School, where they pass their officer's examination, and finally obtain their commissions subject to the approval of the officers of the regiment.

Course followed with those who fail to pass the examination.

Few cadets fail to pass in the final examination of the Prima, for the preliminany examination held by the authorities of the Cadet House excludes any but those who appear properly qualified from admission to the examination before the Supreme Board. With those who are not allowed to go up for the examination, or who fail in it, various courses are adopted according to the character they bear; some are allowed to remain for another year at the Cadet House; others, whose conduct has been exceptionally good, are admitted into the army as under officers, a rank below that of *Fähnrich;* others, who have not this recommendation, are sent in merely as privates, like *Avantageurs* who have not been through the Cadet Corps. All of these at some later period have to pass the *Portepée-fähnrich* examination.

2. The cadets who remain for the Ober-prima and Selecta.

The great majority of the cadets enter the army from the Prima in the manner which has been just described. A certain number, however, (usually about 70) who reach a higher standard or "take honours" in the examination of the Prima, are retained for a year longer at the Cadet House, to receive there the special military instruction which the others obtain at a later period in the War Schools. Of the number selected for this privilege those who are of the age of 17, who have the requisite physical qualifications for admission to the army, and who bear a good character, are placed in the highest class, or Selecta, and have the rank of under officers. The number thus admitted to the Selecta is about 50 each year. Those who have not reached the age of 17, who are of weakly constitution or below the proper standard of height for the army, or whose conduct has not been altogether satisfactory, are placed in the second class or Ober-prima, and rank only as corporals (*Gefreiten*). The two classes have the same instruction, and at the end of the year pass the same examination—that which qualifies for the officer's commission—before the Supreme Military Examination Board. There is, however, considerable difference in regard to the terms on which the cadets of the two classes are admitted to the army. Those of the Selecta who pass the examination enter the army at once as officers, and in their case alone in the whole service is the right of veto dispensed with, which is usually exercised by the officers of the regiment.* Those

Conditions of admission to the Selecta.

And to the Ober-prima.

Admission to the army from the Selecta.

* Their number, only about 50 each year, of course bears an entirely insignificant proportion to that of the whole body of officers of the army.

of the Ober-prima enter merely as ensigns—though with the patent of the rank (*patentirte Portepée-fähnriche*)—and they must serve six months in this grade, and be approved of by the officers of the regiment, before they can obtain their commissions. They are exempt, however, from attendance at a War School and from passing any further examination for a commission. And from the Ober-prima.

Cadets of the Selecta who fail in the examination enter the army merely as ensigns, but are allowed to present themselves a second time for the officer's examination after an interval of three months or longer, according to circumstances, without attending a War School. No one is allowed to remain longer than a year in the Selecta. Those in the Ober-prima who fail are occasionally allowed to remain a second year in that class at the Cadet House; if not, they enter the army merely with the acting rank of *Portepée-fähnrich* (*characterisirte Portepée-fähnriche*), on the same terms as those who pass out of the Prima. It very rarely happens that a *Selectaner* fails to pass the examination; among the *Ober-primaner* there are occasionally a few failures. Course adopted with those who fail to pass the examination.

The class of the Ober-prima is a peculiar feature in the system of the school. Its introduction has taken place only within the last few years, with the object of providing a class for those who though educationally qualified for admission to the Selecta, may from various causes—youth, physical disqualifications, deficiency in practical military qualities, or unsteadiness of conduct—be considered as unfit to enter the army directly as officers on the completion of the year's course of military instruction. They in consequence pass through a sort of period of probation in the Cadet School, and their commissions are delayed until such time as they are in age and all other respects fitted for appointment as officers. In the same way a cadet who is not likely to be able to exercise influence over the juniors, and is thus unfitted for the responsible position of under officer which he would hold in the Selecta, is placed only in the Ober-prima. Object of the class of Ober-prima.

Seventeen is nominally the lowest age at which admission can be obtained to the Selecta, so that a cadet would be at least 18 on obtaining his commission; as is so frequently the case, however, the regulation does not seem to be strictly interpreted. In exceptional cases of good conduct, or peculiar aptitude for drill and practical work, a cadet may be admitted to the Selecta though he has not reached the age of 17. Promotions from the Ober-prima to the Selecta are occasionally made during the year; this, however, is exceptional; as a rule a cadet who has been placed in the Ober-prima remains in it to the end of the course.

Conduct and practical military aptitude indirectly affect the examinations.

Conduct has no direct influence on the examinations, the marks given in which are assigned solely to the theoretical subjects of instruction; but indirectly both conduct and proficiency in gymnastics and drill are taken into consideration. A cadet who does not obtain the minimum number of marks in the examination would often, if he bore a very high character, and had shown excellence in gymnastics and practical military exercises, be allowed to pass, while under other circumstances he would be plucked. On the other hand, permission to go in for the examination can be refused by the authorities of the school to a cadet whose conduct has been unsatisfactory. In the examination at the end of the course in the Prima a cadet holding the rank of corporal (*Gefreiter*), an appointment which is made mainly on grounds of good conduct, can obtain admission to the Selecta by reaching a lower standard than is required from ordinary cadets* So also both conduct and practical military qualifications are much considered in determining whether a cadet who reaches the higher standard in this examination shall be placed in the Ober-prima or be admitted to the higher privileges of the Selecta. None of the advantages which can be obtained by passing through the Cadet House are dependent solely on educational attainments.

The principle of competition to a limited extent recognized at the school.

The system of competition is to a limited extent recognized in the school, more so than is ordinarily the case in Prussia. Some slight advantages are held out to those who show the greatest proficiency in their studies. The names of the best pupils in each class at the end of the year are made known, and such cadets are called the seniors of the class; the best *Selectaner* in each company—*i.e.*, the one who passes highest out of the Prima—has the title of head of the company (*Compagnie-führer*), a position for which there is some little competition; the privileges of the second *Censur* class and the rank of corporal are partly the rewards of industry, and these objects afford a stimulus to study; the order also in which appointments in the army are granted, is determined by the relative merits of the cadets in the examinations. The final examination in the Prima is so far competitive, that a higher standard is required as a qualification for the Selecta than for merely passing into the army; but the actual admission to the privileged class depends on so many other considerations, as probably to prevent any great keen-

* The number of marks required in order to qualify in the examination of the Prima—*i.e.*, to pass into the army as *Portepée-fähnrich*—is 113 out of a maximum of 225. To gain admission to the *Selecta* 153 marks must be obtained by an ordinary cadet, while, for a *Gefreiter* 126 are sufficient.

ness in the competition. Among the cadets of the Selecta itself there is no competition, all who come up to the qualifying standard—the same as is required in the ordinary officers' examination—obtain their commissions as a matter of course;* and far from a commission being looked upon as a prize, the loss of one is a punishment reserved only for serious idleness or misconduct. Recommendation for the King's commendation (*Königs Belobigung*) is the only special distinction held out to those who pass a first-rate examination. A cadet who both in the Prima and in the Selecta obtains this distinction, which is a very rare occurrence, is generally appointed to the Guard. In other cases no preference as regards choice of regiments is granted to those who do best; every cadet who qualifies in the examinations has the same privilege of naming three regiments, to one of which he is almost invariably appointed.

Little inducement held out to exertion.

Notwithstanding the absence of any keen competition, the cadets appear upon the whole to work steadily. Among those in the Selecta, Ober-prima, and Prima, who have the prospect of their examinations before them, there is a good deal of study in private during the hours of recreation, and several of them take private lessons from the masters. Those in the Secunda have not the same incentive to work, and in their case there is said to be some disposition to ridicule those who study out of the regular hours. Idleness, however, if reported by the instructors, is punished ordinarily by loss of leave or extra study (*Strafarbeitstunde*), and in bad cases by arrest, or by being kept up in the vacation. Nor in the highest classes is it possible to make up for idleness during the term by hard work immediately previous to the examination; for a cadet who is reported as idle by the instructors is not allowed to go in for the examination, and is then in the same position as if he had failed to pass. Though, therefore, the system of carrying forward marks for the work done during the term, as in the French schools, is not adopted, the final result in the case of each cadet is to a considerable extent dependent on his industry during the year. It must moreover be remembered that the universal liability to military service in Prussia supplies a most powerful incentive both to industry and to good conduct. Idleness or bad conduct may entail the forfeiture of all prospect of obtaining a commission, and necessitate the performance of the legal period of service in the ranks.

Character of the cadets for industry.

Punishment for idleness.

* In the report of the Commissioners of 1856 it is stated that the examination of the Selecta was competitive, and that only the best were allowed to enter the army as officers. This is no longer the case.

Time at which the examinations are held.

The examination of the *Primaner* takes place generally in the month of March, that of the *Ober-primaner* and *Selectaner* in April, the last month of the school-year. The promotion of the *Primaner* to the Ober-prima or Selecta, as the case may be, takes place immediately after the conclusion of their examination; but the cadets of the Secunda are not advanced to the Prima until the 1st of May, when a new set of cadets promoted from the provincial institutions, together with any admitted from civil schools, join the school to form the Secunda of the coming year.

Case of cadets who go into the artillery and engineers.

Cadets who are intended for the artillery and engineers go through the same course of instruction as the others, except that those who remain in the Selecta or Ober-prima are obliged in these classes to go through a course of mathematics, which is voluntary with the candidates for the line. Those who enter either of the scientific corps after passing the examination in the Prima, follow the usual course leading to the Artillery and Engineer School. They enter an artillery regiment or a battalion of engineers, they serve for a certain time (generally for a year) with the troops, and attend a War School for 10 months, at the end of which time they are examined for their second lieutenant's commission. After this they serve as officers for a certain period longer with their corps, and are finally sent to the Artillery and Engineer School. The few who remain in the Selecta or Ober-prima, and pass their officers' examination at the Cadet House, are, like candidates for the line, exempted from attendance at a War School. Those who pass out of the Selecta enter their corps as second lieutenants; those from the Ober-prima join with the rank of *Portepée-fähnrich*, and have to serve for six months before they obtain their commissions. In both cases a service of one or two years as officers with their regiments is required, before they enter the special school for the scientific corps. From 10 to 12 per cent. of the cadets who annually enter the army go into the artillery and engineers; the proportion is much the same among the pupils both in the Selecta and in the Prima.

General Remarks on the Cadet Schools.

Non-military character of the instruction given in the Cadet Schools.

"It can hardly have escaped observation, that the studies pursued as a qualification for entering the army are, with the exception of the Selecta (and now also of the Ober-prima) almost entirely non-professional, even here in this part of the general system, which is in other respects most military in its character; and the tendency seems to be to carry out to a still greater extent the theory of continuing to as late an age as possible a good general education. There is evidently a

general desire in Prussia to take the officers of the standing army exclusively from the well educated or the higher classes. In the arrangements for the lessons, the very temperate or even timid use of the stimulus of competition deserves to be noticed. At the same time the provision made for giving really good instruction, and for placing all the boys in close relation with their teachers, cannot but excite admiration. The small numbers of which the classes consist, and the care which seems to be taken in providing good teachers, both deserve attention."*

Comparative absence of competition.

In the relations existing between the officers and the pupils, in the personal interest taken in the latter, in the care bestowed upon religious instruction, and upon moral training apart from mere purposes of discipline, the Berlin Cadet House offers a considerable contrast to the French military school at St. Cyr. Both in these respects, and in the greater comfort of the domestic arrangements—in the privacy, for instance, afforded by the use of rooms where few live together—there is a nearer approach to the system of an English public school.

Relations between the officers and cadets.

Domestic arrangements.

The main advantages of passing through the Cadet Corps are, firstly, that a general education is obtained at a much cheaper rate than in the first-class civil schools; and, secondly, that a commission can be gained at an earlier age than by entering the army direct from civil life. A cadet who has passed through the Selecta or Ober-prima is, generally speaking, two years or 18 months younger when he becomes an officer than an ordinary *Avantageur;* and even those who pass merely out of the Prima have an advantage of six months over other candidates for commissions, as they can obtain the rank of *Portepée-fähnrich* at the age of 17½ instead of 18. At the same time the institution is far from being generally popular in the country. By civilians it is looked upon with considerable jealousy, as tending to keep up the exclusive class spirit of the officers of the army; the education given at the Cadet Schools is said to be much inferior to that of an ordinary civil school, and indeed there can be little doubt that the classical and literary instruction given to the cadets is much below that at a gymnasium, even if the mathematical teaching is as good. Even among military men the preponderance of opinion seems to be unfavourable to the Cadet Corps. The great advantage claimed for it by its advocates is, that it encourages military *esprit de corps.* General von Holleben stated that this was one of the chief objects with which the institution was established, and that in this it had eminently succeeded.

Advantages obtained by passing through the Cadet Corps.

Objections entertained to the Cadet Corps in Prussia.

Difference of opinion among military men on the subject.

The institution fosters military *esprit de corps.*

* Report of the Commissioners of 1856.

He ascribes the strong feeling of *Cameradschaft* which pervades the body of Prussian officers, in great measure to the influence of the Cadet Corps. The institution has in this respect been especially valuable in Prussia, where, from the constantly shifting character of the lower ranks, owing to the short period of service, it is important to encourage among the officers a feeling which supplies an element of permanence in the army. A minor advantage is that the cadets of the Selecta furnish an excellent class of officers. It does not, however, appear to be maintained that they prove superior to the *Abiturienten* of a *Gymnasium* or *Real-Schule*, and it may therefore be inferred that their excellence consists more in their general abilities than in their professional acquirements. The commandant of the Berlin Cadet House himself stated that a pupil from the Prima of a *Gymnasium*, with a liberal education, would probably make as good an officer as a cadet from the Prima of the Cadet House. It seems impossible to say that cadets as a rule show more professional ability, or rise to greater distinction in the service, than men who have not passed through the Cadet Corps. Equally distinguished officers are to be found among both classes; Generals Steinmetz and Herrwarth von Bittenfeld are old cadets; General von Moltke entered the army from civil life.

But the cadets do not, as a rule, appear to make better officers than the *Avantageurs*.

Among commanding officers of regiments there appears to be generally a feeling unfavorable to the cadets; partly perhaps because every cadet who is appointed to their regiments deprives them of the patronage of a nomination, but mainly because they prefer their young officers to be men who have had the more liberal education afforded by civil schools. It is maintained by many distinguished officers that the exclusively military atmosphere, by which the cadets are surrounded from so early an age, has a narrowing effect upon the mind, and that the almost monastic system in which they are brought up, is fatal to freedom of thought and development of character. The cadets, it is said, having all been confined to the same limited circle have nothing but one-sided ideas of life; they feel no interest in, and can scarcely converse about anything but military subjects; they have little general information; and as a consequence, if from illness or other causes they are prevented from entering the army, or obliged to quit it at an early age, they are entirely unfitted for any other career. In short, the Cadet Corps deprives young men of the enlarging influences of a liberal education, and of the advantages which, in Prussia, correspond to those of a public school life in England. These appear to be the opinions held by the great majority of the officers of the army,

Commanding officers generally have an objection to cadets.

Opinion as to the prejudicial results of an education in the Cadet Corps.

and even by many who have themselves been educated in the Cadet Corps. Even the strongest advocates of the institution are most decidedly opposed to the idea of making all candidates for commissions pass through the corps; General von Holleben stated that he would be as strongly adverse to taking all officers from the cadet corps, as to requiring all alike to be *Abiturienten*, being of opinion that the admixture of the two classes is of great advantage to the service. The commandant of the Berlin Cadet House, though a warm admirer of the corps, expressed the strongest opinion against making it the only means of admission to the army, and stated his belief that it would be a serious disadvantage to require all officers to pass through the same "narrow groove." No opponent of the Cadet Corps could have spoken in stronger terms on the subject than this officer did. It appears therefore that even in Prussia, where the officers of the army probably form more of a peculiar class than in any other country, military opinion has pronounced decidedly against the policy of requiring *all* candidates for commissions to pass through a special school before entering the army, and the system of giving an exclusive education even to *a proportion* of those candidates is by many regarded as objectionable. In the letter by Colonel Walker,* on early military education, to which reference has already been made, allusion will be found to the opinions held by may distinguished Prussian officers in regard to the disadvantages of the exclusive system of education of the Cadet Schools as a preparation for the army.

Opinion decidedly adverse to the Cadet Corps being made the sole means of admission to the army.

THE WAR SCHOOLS.

(*Kriegs-Schulen.*)

General Account of the Schools.

The War Schools at the present time correspond to the establishments described in the Report of the Commissioners of 1856, as the Division Schools. Very great changes, however, have been made in their organisation; their object remains the same—to afford to candidates for commissions, after they have performed a certain amount of service in the ranks, the professional instruction deemed necessary to fit them for the duties of regimental officers; but in almost every other respect the schools have been put on an entirely new footing.

Changes in the old Division Schools.

In 1856 there were nine Division Schools for the whole army, one for every army corps; the number of students,

Their defects.

* Appendix, page 528.

however, at each school was very small (apparently not exceeding 10 or 15); the staff of instructors was too great in proportion to the number of the students, while at the same time the inadequacy of the pay offered to them, combined with the mode of their appointment, failed to secure officers of ability for the posts; great independence was allowed to the authorities of each school; and there was little uniformity in the system of instruction, owing to the various schools not being sufficiently brought under the control of a central department. It has been the object of the changes which have been since introduced to remedy these defects.

The present War Schools.

The new system was introduced in the year 1859; the name of the establishments was at that time changed to War Schools (*Kriegs-Schulen*); their number was reduced from nine to three—one for every three army corps—and the number of students at each was proportionately increased. In 1863 a fourth school was opened at Engers, and owing to the large augmentation of the Prussian army since the war of 1866, it has been found necessary still further to increase this number, in order to provide the necessary supply of officers.

Their number.

At present there are six schools in full operation, which are situated in the following towns:—Potsdam, Erfurt, Neisse (in Silesia), Engers (near Coblentz), Cassel, and Hanover. Those at Cassel and Hanover were only opened in 1867. A seventh school is now building at Anklam in Pomerania, which will be opened in the course of the present year, and it is probable that an eighth will eventually be established. The number of students at each school is about 100, and it is calculated that 800 officers are required yearly to supply the vacancies in the army. At the present time there is no connexion between the various army corps and individual schools, as used formerly to be the case.

Instruction at a War School a necessary preliminary to a commission.

Except in certain special cases every aspirant for a commission in all branches of the service is obliged, after having done duty with his regiment for a certain time, to pass through a course of instruction at a War School, before presenting himself for the examination which determines his fitness for the rank of officer.

Conditions of admission.

A service of at least from five to six months in the ranks, a certificate of proficiency in regimental duty, and a certificate of having passed the examination for the grade of *Portepée-fähnrich* are necessary qualifications for admission to a War School. The actual rank of *Portepée-fähnrich* need not necessarily have been attained, as both privates and non-commissioned officers may be admitted to the War School course; but, as a matter of fact, few go to the schools who have not already gained the ensign's sword-

knot, for though a service of only five months is a sufficient condition of admission, few colonels of regiments recommend a young *Avantageur* to be sent to a War School until he has served nearly a year. It is thought important that before being admitted to the theoretical instruction of the school, the young soldier should have seen something practically of all sorts of duty and drill; and it is generally considered that a year is the shortest period in which the necessary practical experience can be gained. At the school visited (that of Hanover) the shortest service of any ensign previous to admission to the school was 10 months. In the artillery and engineers a year's previous service with the troops is almost invariably exacted; and by the end of a year an *Avantageur* has generally reached the rank of *Portepée-fähnrich.*

Period of previous service in the ranks exacted.

Admitted to a War School at an average age of 19 or 20, the young officers-aspirant go through a course of special military instruction, the ordinary duration of which is ten months; but recently, owing to the great demand for officers, the course has been reduced at some of the schools to as short a period as six months. This, however, is an abnormal state of things, which will cease as soon as a sufficient supply of officers has been obtained. At the end of the course of instruction at a War School the *Portepée-fähnrich* has to undergo his officer's examination, and if successful in this, he returns to his regiment with a certificate of fitness for promotion to a commission; his actual promotion, however, still depends on the occurrence of a vacancy, and on his acceptance by the officers of his regiment.

Duration of the course.

As a general rule a course of instruction at a War School is compulsory on all candidates for commissions before passing their officer's examination. There are, however, certain exceptions to this rule in the following cases:—

Cases of exemption from attendance at a War School.

1. Cadets from the Selecta and Ober-prima of the Cadet House, who pass their officer's examination on quitting the Cadet House before entering the army.
2. Young men who previously to their admission to the service have passed at least a year as students at a Prussian university.
3. Landwehr officers who have received permission to be transferred from the Landwehr to the active army.

The two latter classes are exceptionally allowed to prepare themselves for the officer's examination by private study without going to a War School, and they pass the examination before the Supreme Examination Commission at Berlin; the cadets have already gone through their course of professional instruction at the Cadet House. The three exceptions

named comprise the only cases in which exemption from attendance at a War School is sanctioned by the regulations of the service. At the present time, however, a similar privilege is exceptionally extended to some others, owing to the demand for officers and the want of accommodation in the existing War Schools. At one time this favour was more generally allowed; but applications for exemption from the War School course became so numerous, that it was found necessary to enforce the rule more strictly. At present the exceptional privilege is granted to little more than about 20 candidates yearly, and it is not intended that this exemption should be continued when the War Schools are in a position to afford instruction for all candidates for the rank of officer. Indeed the existence of any exceptions is not much approved of, as the system of discipline to which the students at the War Schools are subjected, is considered as of almost equal importance in the training of young officers with the actual instruction given them.

Exceptional exemptions at present granted.

Administration of the War Schools.

The old Division Schools were under the authority of the commanders of the army corps to which they were respectively attached. The War Schools are now entirely independent of the army corps, and are placed under the immediate control of the central educational department in Berlin, presided over by General von Peucker. A special Board of Studies (*Studien-Commission*), consisting of four military members, assists this officer with advice regarding the system and nature of the instruction. The course of study and the organisation are uniform for all the schools. The establishment of each consists of:—

Establishment.

One director, a field officer of the General Staff.
One adjutant, who also acts as librarian.
Eight instructors, generally of the rank of captain, viz:—
Two for tactics and administration.
Two for the science of arms (*Waffenlehre*), officers of artillery.
Two for fortification, officers of engineers.
Two for surveying and military drawing.
Six "inspection officers," of the rank of lieutenant, who are more immediately charged with the superintendence of the students, and in addition give instruction in drill and other practical exercises, but have nothing to do with the theoretical instruction. They consist of:—
Two cavalry officers for instruction in riding.
Two infantry officers for instruction in gymnastics.
Two infantry officers for instruction in drill and musketry practice.

No civilians are employed in connexion with the schools. The selections for all the appointments are made by the Inspector General of Military Education. The main qualification looked to in selecting an officer for the post of director is educational experience, combined with firmness and tact in the maintenance of discipline. The directors are appointed from officers of the General Staff, and usually from among those who have passed through the War Academy, or senior department. An officer selected for the post has not the power of declining it. The instructors were formerly appointed by the commander of the army corps to which the school belonged, and the appointments were frequently given to officers very unfit for them. It is now a necessary condition of appointment that an officer should have been at the War Academy. Considerable advantages are held out to the instructors in the way of increased pay and quicker promotion; they obtain the pay and rank of captains of the first class about two years sooner than they would do in their regiments; and, in addition, those who show superior ability in the discharge of their duties, are sometimes selected for employment on the General Staff. Their appointments, as well as that of the director, are limited to five years, but in practice they are seldom held for so long a period. The officers holding the instructorships are paid entirely from the War School funds; they are seconded from their regiments, their places in which are filled up, and they form for the time being a sort of special corps. The advantages offered to the instructors are said to be now sufficient to secure a very able class of officers for the posts. The subalterns employed as inspection officers are only considered as temporarily detached (*abcommandirt*) from their regiments; they continue to draw their regimental pay, but receive an additional allowance of 100 thalers (15*l.*) yearly; this amounts to an increase of about one-fifth on the ordinary pay of a subaltern in Prussia.

Appointment of officers.

Their pay.

The annual expense of keeping up each of the War Schools, with its average establishment of 100 students, is from 13,000 to 14,000 thalers, or about 2,000*l.* For the seven schools which will be in operation in the course of 1869, the sum of 295,500 thalers (14,775*l.*) is provided in the estimates. This includes the pay of the directors and instructors, but only the additional pay of the inspection officers, the regimental pay of the latter, as well as that of the students, being drawn from their corps. Nothing could more clearly show the greatly increased attention now bestowed upon the professional instruction of officers in Prussia than a comparison of the present and former outlay upon it. In 1856

Annual expense of the War Schools.

Great increase in the expenditure of late years.

the whole annual expenditure upon the nine Division Schools only amounted to 17,000 thalers, little more than the sum which is at present devoted to each single War School.

The War School at Hanover.

The War School at Hanover.

The War School visited was that which has been established at Hanover since the annexation of that province. This, with the exception of the school at Cassel, is the most recently founded of the War Schools, and may therefore perhaps be in some respects considered a favourable specimen of the class; but the general system of discipline, and the method and course of instruction are the same at all the institutions.

The school buildings.

The school at Hanover is situated in the outskirts of the town, in the building formerly occupied as a school for the Cadet Corps of the Hanoverian army. The school buildings occupy three sides of a quadrangle, the fourth side of which is formed by the house of the director, a building standing detached by itself. The ground floor rooms are taken up with the mess accommodation of the officers and students. The officers employed at the school have a mess precisely like that of a regiment, the arrangements of which much resemble those of a regimental mess in our service. The subalterns employed as "inspection officers" must necessarily be unmarried men, and live in the school buildings; the instructors are permitted to reside in the town.

The mess.

The mess accommodation for the students consists of a large dining room, and two ante-rooms, one of which is used as a reading room, and is well supplied with newspapers. The mess is open to the students throughout the day. They are allowed to take breakfast and supper at such hours as they please, but all dine together at 2 o'clock; attendance at dinner is compulsory, and the inspection officer on duty is required to dine with the students. The management of the mess is in the hands of a committee composed of one of the inspection officers and six of the senior students The daily charge for dinner is fixed by the director, and a general control is exercised by him over the other expenses. In order to bring the necessary expenses within the means of all, no liquor except beer is allowed at dinner, but at other times of the day wine may be called for in the mess; the introduction of liquor of any sort into the rooms in which the students live is forbidden.

Reading-room.

The reading-room is well provided with newspapers, and with chess, draughts, and other similar games. There are no billiard tables in the school, but this arises simply from want of space for a billiard room, and not from any objection

to provide such a means of amusement for the students. Indeed the want of billiard tables was mentioned as a disadvantage by the director, who also appeared greatly to regret the absence of the manly games of English schools, though the time of the students is so much occupied that this want is perhaps but little felt.

Quarters of the students.

The first and second floors of the main part of the building are occupied with the quarters of the students. Each quarter consists of two rooms—a sitting-room and bed-room opening into each other. The rooms are lofty and airy, but differ considerably in size; the largest quarters have six, and the smallest two occupants; none of the students have private rooms. The rooms are very plainly furnished; in the day-room each student has a desk at which he works, and a cupboard for his uniform; the bed-rooms are furnished with beds somewhat better than ordinary barrack beds, and with a washing stand for each occupant. No articles of luxury, and no furniture beyond that supplied are allowed in the rooms. Between every two or three sets of quarters there is a separate quarter for one of the inspection officers, who are distributed through the building to maintain order. A certain number of soldier servants are employed at the school to wait upon the students, but no private servants are allowed, partly as a measure of economy, partly from a wish to assimilate the treatment of the young ensigns to that of private soldiers.

Library.

Near the quarters on the first floor is the library, well supplied with works of military literature, which formerly formed the collection of the Hanoverian Cadet Corps. In the wings of the building on the second floor are the lecture-rooms, four in number; they are large and handsome rooms, capable of accommodating considerably larger classes than those by which they are now occupied. By the kindness of the director, Lieutenant-Colonel Berger, permission was granted to attend two of the lectures, one on field fortification, the other on the science of arms. The subject of the former lecture was the construction of bridges on service; that of the latter was rifled artillery The classes were between 20 and 25 in number; in each case a period of about 20 minutes before the close of the lecture was employed in questioning the students in the explanations previously given by the professor. A portion of the time assigned to each lecture is always occupied in this manner.

Lecture rooms.

The lectures.

Model rooms.

Near the lecture-rooms are the model rooms, containing models of works of fortification and of artillery carriages, with specimens of arms and ammunition of various descriptions. The collections are at present small, owing to the recent estab-

lishment of the school, and the limited sum of money annually allowed for increasing them; there is, however, a very good collection of surveying instruments for the use of the students.

Gymnasium.

The gymnasium occupies a detached building by itself; here the students were seen to go through a course of extension motions, bayonet and broadsword exercise, fencing, vaulting, jumping, and gymnastics on the bar. In addition to the exercises within the gymnasium, they are also practised out of doors in "running drill," which consists in running in full marching order, completing a certain distance, jumping three or four palings and ditches, and scaling a wall within a given time. The young men go through precisely the same course of gymnastics as the soldiers of a regiment.

Drill ground.

Beyond the gymnasium is the drill ground, where in the afternoon drill took place. The ensigns were drawn up in line, arranged in squads (or "inspections") according to their respective arms, to receive the director. Various individuals were called out to put the infantry through the manual and platoon exercise; the cavalry were similarly put through the sword and lance exercise; after which the infantry skirmished, and went through a few company movements. A mixed squad of all arms was subsequently exercised in field-gun drill.

Riding school.

A short distance from the school buildings is the riding school, a fine building recently erected, with stabling for 36 horses kept for the use of the students, and barrack accommodation for 20 cavalry soldiers and non-commissioned officers, who are attached to the school.

The whole school establishment is on a very complete and extensive scale; the old Hanoverian Cadet House provided accommodation, which with a few alterations was admirably adapted for the purpose to which it is now put. The actual number of students in the school at the time it was visited (in October 1868) was 93.

Course and Method of Instruction at the War Schools.

The school course.

Under ordinary circumstances the course of instruction at a War School lasts 10 months—the school year beginning on the 1st of October and ending on the 31st of July—but at the present time, owing to the transition state of the arrangements with regard to the War Schools and the demand for officers, this regulation is not uniformly carried out. Last year, for instance, the course at Hanover began on the 1st of March, and only lasted nine months; and at some of the schools the course has been still further shortened, in order to provide a sufficiently rapid supply of officers.

The subjects of instruction are purely professional; they comprise:— Subjects of instruction:

1. *Tactics.* General notions on elementary tactics, and on the organization of armies; special tactics; orders of battle; formations in line and column, and in open order; skirmishing; characteristics of the different arms. Tactics.

Field movements of infantry, cavalry, and artillery, according to the Prussian regulations.

Influence of ground upon battles, and on the employment of the various arms.

Reconnaissance of military positions; marches; duties on the march, in cantonments, and in camp; duties connected with supplies; transport of troops by railway; securities against surprises and means of obtaining intelligence, precautions to be taken on the march; advanced and rear guards; out-post duty; patrols and reconnaissances.

General dispositions for battle; offensive and defensive actions; employment of reserves; pursuits and retreats. Historical sketch of the progress of tactics.

Employment of the various arms in action, singly and in combination with each other.

Attack and defence of positions, villages, defiles, woods, bridges, &c. Street fighting. Minor operations: surprises, ambuscades, detachments, foraging parties, escorts; duties connected with railways and telegraphs on service.

In the lectures on tactics the instructors are directed constantly to illustrate theoretical principles by examples from military history.

2. *Science of Arms* (*Waffenlehre*). Introductory remarks on the classification of various kinds of arms according to their objects, with a very brief *résumé* of their history. Arms and munitions of war.

Gunpowder, its ingredients, manufacture, combustion, and proof; requirements of a good powder, preservation of powder, causes of deterioration. Precautions to be taken in working with powder, and in its transport. Other explosive materials.

Artillery in the Prussian service; classification of guns; their materials, and mode of manufacture.

Gun carriages and waggons of various sorts used in the artillery and other branches of the Prussian army.

Various kinds of artillery ammunition; its transport on service.

Small arms; classification of various kinds; their construction, proof, and preservation; manufacture of small ammunition, its supply and transport on service.

Theory of projectiles; trajectory, resistance of the air,

effects of rifling. Range and effects of the fire of field and siege artillery, and of small arms; results of experiments; comparison of the needle gun with various other descriptions of breech-loading rifles.

Practical employment of various kinds of fire in action; service and working of guns; employment of artillery in sieges, both in the attack and the defence.

Fortification.

3. *Fortification*—restricted to such general knowledge of the subject as would be required in positions in which a regimental officer may be placed, and consisting chiefly of field fortification. The construction of ordinary field works, the modes of rapidly entrenching positions, and strengthening posts. Communications in war: roads, railways, bridges, fords, &c.; the modes of destroying and re-establishing communications on service. The construction of various kinds of military bridges. Method of laying out camps, construction of huts, field ovens, &c.

Elements of permanent fortification, with special reference to the modern German system.

Provisional fortification (*provisorische Befestigung*), as distinguished from field and permanent fortification; entrenched camps. Attack and defence of fortresses; progress of a siege; employment of troops of the various arms in sieges, illustrated by some historical example.

Topography and surveying.

4. *Topography, military drawing, and surveying.* General notions of topography; characteristics of various formations of ground in a military point of view. Practicability of ground for troops.

Construction of plans; orthographic and perspective projections, bird's-eye views, ground plans, elevations, profiles, &c. Construction and use of scales. Military drawing: method of representing ground by contours and hachures; representation of slopes by scales of shade, according to the systems of Lehmann and Müffling respectively. Conventional signs employed in military plans.

Theory of military surveying; choice of scale to be employed; instruction in the ordinary instruments used for measuring distances, angles, and heights; practical operations of a survey; measurement of a base, triangulation, levelling, interpolation. Instruments used in plotting. Particular methods to be followed in surveys of open and wooded, level and hilly country, towns, fortifications. Rapid field sketching with the compass and by eye.

Military regulations.

5. *Instruction in military regulations and duties of the service* (*Dienst-instruction*). This subject corresponds nearly to the subject of "administration and law," as taught in the French schools.

It comprises :—

The organization and strength of the Prussian army. The system of recruiting; regulations regarding the ages for compulsory military service, and the exemptions from such service.

The mobilisation of an army corps, and its formation on a war footing.

The administrative departments of the army; the staff, intendance, medical department, and manufacturing establishments.

Military law: the Articles of War; the penal code of the army; courts-martial, courts of enquiry, and general regulations connected with disipline.

Duties connected with the interior economy of a company or squadron; regimental and battalion duties of officers; garrison duties, duties on guard. Duties on the march, in camp, and in billets.

The instruction in this subject is given by the instructors in tactics.

Military correspondence.

6. *Military Correspondence* (*militairischer Styl*), consisting of instruction in the preparation of official letters, reports to superior officers, instructions to subordinates, returns, and field states, and in the mode of keeping company accounts. The instruction is given with special reference to the subjects which would fall within the duties of a subaltern officer.

Practical exercises.

Besides the practical instruction by which the lectures in the various subjects are supplemented, the course at the War Schools also includes riding, fencing, gymnastics, and drill.

Method of instruction.

The method of instruction to be systematically carried out at all the War Schools is very minutely detailed in regulations issued from the central educational department. For purposes of theoretical instruction, as is generally the case in Prussia, small classes, not exceeding 30 at the utmost, are adopted, this being considered the largest number which can be superintended by a single instructor consistently with his paying proper attention to individuals. The students at each school, generally about 100 in number, are divided into four "parallel classes." On first entering the school an examination takes place with the object of testing, not the professional knowledge, but the *general* abilities of the students; they are required to write one or two essays on general subjects—political, historical, or social—and according to the result of this examination they are classified, those of nearly equal ability being as far as possible put in the same class. The first class is, in general, chiefly composed of those

Arrangement in classes.

who before entering the army had passed their matriculation examination for a university (*Abiturienten-exam*), and who generally show a marked superiority to the other students. The actual subjects taught to all the classes are the same; but each class attends lectures separately, and the professors are directed to suit their method of instruction to the abilities of the students in each. As there are two instructors for each of the subjects taught at the school, every instructor has two of the four classes under his special charge. No text books are employed, but in every subject a general outline of the course of lectures to be given is published, and to this the instructors at all the schools are obliged strictly to conform. Each instructor is also required to draw up a programme containing the leading heads of his lectures (*Leitfaden*), which is lithographed and distributed to the students. The lectures are professorial in character, the students taking notes which are periodically looked over by the instructors. The lecturer, however, is prohibited from reading or merely dictating his lecture; and, on the other hand, the students are taught in taking their notes to aim at giving a brief *précis* of the lecture, rather than to attempt to transcribe the words of the lecturer. The great object of the system of teaching seems to be to prevent mere mechanical work on the part of the students, to enlarge their minds, and to lead them, instead of simply charging their memories with a certain amount of facts and details, to exercise habits of reflection. A certain portion of each lecture is devoted to questioning, and in all the subjects essays and memoirs are frequently set to be written by the students—sometimes in the lecture room under the superintendence of the instructor, sometimes in private in their own rooms. There are also, every three months, general examinations, both on paper and *vivâ voce*, to test the progress of the students. As a check upon these examinations, the classes are examined in each subject not by their own instructor, but by the officer who has lectured to the other classes. Great importance is attached to *vivâ voce* examinations, not only as a test of actual knowledge, but as a means of cultivating readiness of resource and rapidity of judgment. All written compositions are required to be sent in in the form of military reports, and to be written in a concise style.

Programmes of the lectures supplied.

Care bestowed on the system of teaching.

Questioning and written exercises.

Quarterly examinations.

The lectures supplemented by application lessons.

The lectures on every subject are further supplemented by frequent "lessons of application" (*Applications-stunden*), which are employed sometimes in explanations and questioning, sometimes in writing essays and memoirs on questions set by the instructors, but more frequently in practical instruction in the subjects theoretically taught in the lecture room. Thus, during the whole course, theory and practice go hand

in hand. In addition to the practical instruction given during these lessons of application, one month and a half at the end of the course, after the termination of the lectures, are more especially devoted to practical out-door exercises.*

Private study.

In regard to study and preparation for the lectures, the students are left mainly to themselves, provided they show a disposition to be industrious. For those, however, who can not be trusted to study if left to themselves, there are two hours' compulsory study (*Arbeitstunde*) every evening in their own rooms; during these evening studies there is not, as in the French schools, any stated subject of study; the students are obliged to occupy themselves in something connected with the course of instruction, but are left free to choose the particular subject for themselves. The senior in each room is responsible for every one being properly employed, and the rooms are frequently visited by the officers on duty to see that all are occupied in study.

All subjects are obligatory.

All the subjects taught are obligatory; there are no voluntary studies; and the students are even prohibited from taking private lessons in languages or other extra subjects, as it is considered that the ordinary course of instruction is sufficient to occupy their time completely.

Time devoted to the various subjects of study;

The number of lectures—each of an hour's length—allotted to the various subjects weekly, is uniformly fixed as follows for all the schools:—

	Lectures.	Lessons of Application.
Science of arms	3	2
Tactics	3	2
Fortification	3	2
Theory of topography and surveying	2	2
Plan drawing	4	0
Instruction in military duties	1	1
Military correspondence	0	1
Total	16	10

and to practical exercises.

The students during the whole course attend riding school every second day, for about three quarters of an hour on each occasion, and in addition to the lessons in the school they have a good deal of practice in riding, as they are frequently taken out to sketch and reconnoitre on horse-

* The system of instruction at the War Schools seems so admirably adapted to its object—that of giving a purely military education—that it has been thought advisable to make numerous extracts from the regulations on the subject, which will be found in the Appendix, page 547.

back. They have fencing and gymnastic lessons also every second day, alternately with riding; they have artillery gun-drill and aiming drill about once a week, and two hours practice weekly in the regimental drill of their own arms, in addition to the more general instruction in drill which they receive during the lessons of application in connexion with the course of tactics. The ensigns of artillery and engineers have additional instruction in the special duties of their corps.

Drill.

The students are more particularly instructed in the drill of the arms to which they respectively belong, but they also learn the general elements of that of the other services, and both the infantry and cavalry ensigns go through a course of instruction in the service of field guns. Battalion and regimental movements are practised by means of skeleton drill. The chief object kept in view in teaching both drill and gymnastics is that of fitting the young ensigns for the duty of giving instruction in these subjects when they become officers; and for this purpose individuals are constantly called out to put their comrades through field movements. In addition to the practical instruction in riding, fencing, gymnastics, and drill, there is a course of swimming for those who are unable to swim.

Daily routine.

In the actual arrangement of the daily routine of studies considerable independence is left to the director of each school, due regard being paid to the allotment of time to the various subjects which is fixed by the general regulations for all the schools. The ordinary routine of the day's work at Hanover, except during the heat of the summer months, when certain modifications are made, is as follows:—

The students rise at half-past 6, and answer roll-call at 7; at 8 lectures commence and continue till 11; from half-past 11 to half-past 1 there is, on alternate days, riding school or gymnastics and fencing. Dinner takes place at 2. From 3 to 4 on five days of the week there is gun drill or bayonet exercise for some of the students, followed on each day from 4 to 6 by two hours of lessons of application in one of the subjects of instruction. On Saturdays two hours after dinner, from 3 to 5, are occupied in the special drill of the respective arms, and there is no subsequent lesson of application. From 6 to 8 on ordinary days, and from 5 to 8 on Saturdays, the students are free; at 8 there is roll-call, after which, from 8 to 10, there is, for a certain number of the students, private study (*Arbeitstunde*) in their own rooms, for the purpose of writing notes of the lectures and preparing for the next day's work. They are visited occasionally during this time by the inspection officer, and the senior ensign in each room is responsible for the maintenance of order. This

evening study is not compulsory upon all the students; those who are diligent, and upon whose voluntary industry reliance can be placed, are exempted from it. Between one third and one half of the students generally enjoy this privilege. On the conclusion of the evening study all are required to go to bed*. The amount of free time during the day only consists of about an hour after dinner, for those who are not then required for drill, and two hours, from 6 to 8, in the evening. Those, however, who are exempted from the evening study are free after 6 o'clock. On Sundays the students are required to attend church with the troops of the garrison in the morning, and after dinner they are free until 10 at night. There is about a fortnight's vacation at Christmas and Easter, and 10 days at Whitsuntide.

The practical course after the conclusion of the lectures.

Of the 10 months of which the school course consists, eight and a half months are employed in the above manner, in what is called "the theoretical course," while the remaining month and a half are occupied in the "practical course." It will be seen, however, that even during the theoretical course much really practical instruction is given; not only do drill, riding, and gymnastics go on continuously throughout it, but the lessons of application consist chiefly of practical instruction. The distinction between the theoretical and practical course appears to be, that the former consists chiefly of instruction given to the students, and practically exemplified, while the latter mainly comprises exercises or examinations in their power of making a practical application of the knowledge previously acquired. The time, also, during the practical course is more particularly devoted to out-door work, though lectures do not entirely cease during it. The practical course in the various subjects is as follows:—

Nature of the practical instruction. In tactics.

1. In tactics, reconnaisances of military positions are executed, and reports are written by the students detailing the mode of occupying the ground with troops on given conditions, and describing the dispositions required for the attack and defence of the positions. Instructions for posting out-posts, and for sending out patrols, foraging parties, &c., are written with reference to the ground reconnoitred. One day is allowed for the completion of each scheme of this sort. The subject is set in the morning; the students are sent out

* In summer the students rise at half-past 5; lectures commence at 7, and with the lessons of application are continued until a quarter to 12. Dinner takes place at 1; the students are free in the afternoon, and the riding and gymnastic lessons are given from 5 to 7 in the evening. Detailed tables of the distribution of time both in summer and winter are given in the Appendix, page 559.

mounted to reconnoitre the ground, and to make a rapid sketch of it without instruments. About the middle of the day they return to the school, and during the afternoon complete their sketch and write the report, both of which are given in to the professor in the evening. The reports are expected to be such as would be required from an officer employed on similar duty on active service. About 10 days are employed in the execution of various schemes of this kind.

In the science of arms.

2. In the science of arms (*Waffenlehre*) the ensigns go through a short course of musketry practice, for which 100 rounds of ammunition are allowed. At each practice they fire about 15 or 20 rounds. They are also exercised in cleaning arms, and in the manufacture of cartridges. They attend the artillery practice of the troops, and write reports upon the experiments witnessed. They are taken to visit an arsenal, a gun foundry, a small arms manufactory, a laboratory, and other manufacturing establishments, and are required to send in a description of the various manufacturing processes which they have seen. They also write a memoir describing the mode in which artillery would be employed in the attack and defence of some actual work of fortification which has been visited.

In fortification.

3. In fortification, the practical course comprises tracing and profiling field works on the ground, and attendance at the operations executed by the troops of the engineers in sapping, mining, throwing up entrenchments, and bridging. Instruction is also given in hut building, the construction of field ovens, and other practical operations connected with camp life. Schemes are set for putting houses, villages, &c., into a state of defence within a given time and with a certain number of troops at disposal, as well as for throwing up hasty entrenchments to hold bridges or other positions in order to cover the retreat of an army, and for similar purposes. Such schemes are accompanied by calculations of the time and amount of labour required for the execution of the proposed works, and of the garrison necessary to man them. The students are also taken to visit some fortress, and are required to write a detailed description of the works. Five days were spent at the fortress of Minden last summer by the students of the school of Hanover, part of the time being spent in an inspection of the fortifications, and part in visits to the arsenal and other manufacturing departments.

In surveying.

4. In surveying, after preparatory practice in triangulation, the students make a survey of a village, contour a piece of hilly ground (measuring the vertical angles and calculating

the altitudes), perform various operations in levelling, and finally execute the triangulation and finished survey of a tract of country on a scale of $\frac{1}{25000}$. In making this survey the plane table, in connexion with an instrument called the *Kippregel*,* which is generally used by the Prussian staff, are employed for fixing the chief points, and the details are filled in partly with the compass, partly by eye. The students are sent out for this survey in parties of five, but each individual is required daily to send in a report called the "Journal of the Kippregel," giving a detailed account of the day's work. About a fortnight is employed on the survey, the students being engaged during the morning on the ground, and during the afternoon in plotting their work indoors. Reconnaissance sketches and reports on villages, roads, rivers, &c., are also included in the course.

Attention bestowed on rapid field sketching.

Great importance is attached to rapid sketching without instruments, and to sketching on horseback. All the sketches in connexion with the various schemes sent in are done merely by eye. The various reports and field sketches executed during the practical course at Hanover last year (for the completion of each of which only a single day was allowed) were seen, and many of them appeared to contrast not unfavourably with those done at the Staff College at Sandhurst, for which a period of a fortnight is generally given.†

The instruction at the War Schools is exclusively military.

The whole course of instruction at the War Schools is eminently practical, and has a direct bearing on military duties. The general education of the candidates for commissions is supposed to have been sufficiently tested in the examination previously passed for the rank of *Portepée-fähnrich*. At the War Schools all matters of a non-military character are strictly excluded from the course of instruction; no time is spent upon mathematics or other unprofessional subjects; even modern languages are not taught. And with this limitation of the course to purely military instruction, it seems to be thought that the period of 10 months is sufficient to admit of the young ensigns receiving a very satisfactory training in the practical duties which will devolve upon them as officers.

Discipline.

Objects kept in view in the discipline enforced.

The principles on which the system of discipline in force at the War Schools is founded are, firstly, that young men

* For a description of this instrument see Appendix, page 584.

† Tables of the practical course at Hanover last year will be found in the Appendix, page 565.

of the age of the students require a certain amount of moral control; and, secondly, that those who aspire to the rank of officer should acquire habits of obedience to the regulations which they will themselves hereafter have to enforce. The discipline has, therefore, at once a moral and a military object in view. For purposes of discipline the students are divided into six "inspections," each of which is formed of those belonging to the same branch of the service, and is under the special charge of one of the subalterns employed as inspection officers.

The students subject to military law.

Being actually in the army, and receiving pay as soldiers, the young ensigns are of course under military law, and in matters of duty are treated much as private soldiers, though off duty there is considerable intimacy between them and the officers. In some respects the discipline to which they are subject is stricter than that to which they have been accustomed while serving as *Avantageurs* with their regiments. They have little free time during the day; indeed, from 8 o'clock in the morning, when they begin work, until 10 at night, when they go to bed, they have only about two hours, from 6 to 8 in the afternoon, really to themselves. Those who as a privilege are excused from the compulsory study in the evening, are free after 6 o'clock; but they cannot get through their necessary work, or retain their right to the privilege of exemption from compulsory attendance at the evening's study, without giving up some other portion of their free time to private reading. All are obliged to be in by 10 at night, and even when leave is granted, unless under very exceptional circumstances, it does not extend beyond 11. For those who come in after 11, even with leave, there is a system of fines, which are paid to the school porter, similar to the "gate fees" at the colleges of Oxford and Cambridge.

Strictness of the regulations.

Duties of the inspection officers in regard to the maintenance of discipline.

Within the school order is chiefly maintained by the inspection officers, who live within the buildings, and have their quarters among those occupied by the students. One of these officers is on duty each week, and is then obliged to remain constantly within the school. He calls the rolls, sees that every one is present at the proper time at the lectures, dines with the young men at their mess, visits their rooms during the evening study, and is charged with the details of the routine of daily duty. The inspection officers are also charged with the instruction in drill, gymnastics, and riding, but take no part in the theoretical instruction. The instructors, as they do not live within the school, are naturally less brought into daily contact with the students than the inspection officers, but they have exactly the same powers in regard

The instructors also exercise disciplinary powers.

to discipline and punishment; indeed, all the officers employed at a War School are looked upon as forming a single body, like the officers of a battalion, and occupy towards the students much the same position as regimental officers towards the soldiers of their regiment. The instructors can punish not only misconduct in the lecture room, but irregularities which come under their notice at any time or place. Attendance at lectures is looked upon exactly as a military duty, and misconduct during them is treated as an offence on duty under arms, which might in extreme cases subject the offender to a court martial. In the same way all exercises set by the instructors to the students are regarded as being ordered by military authority, and any neglect in their execution is punished as a breach of military discipline.*

And the senior students have authority over the others.

To assist the officers in the maintenance of discipline, certain of the ensigns themselves are invested with superior authority over their comrades, and occupy much the position of non-commissioned officers in a regiment. They are in the first instance generally appointed according to their seniority in the service, but if they show themselves deficient in the qualities required for the maintenance of their authority, they are deprived of their rank. The position is regarded as a distinction, but carries no special privileges with it. Those who perform their duties in a satisfactory manner are mentioned to the commanding officers of their regiments, and this recommendation gives them some claim to speedier promotion.

Their various ranks.

In each of the six inspections into which the school is divided for purposes of drill and discipline, there is a senior for duty purposes (*Dienst-ältester*); his responsibility is chiefly confined to matters of duty when the ensigns are at drill and on parade. One of the *Dienst-ältesten* is on duty daily, as an orderly non-commissioned officer, to assist the inspection officer of the day. In each of the four classes into which the students are distributed for purposes of instruction, there is a senior of the class (*Classen-ältester*), whose duty is to report the absence of any one from lecture, and to maintain order in the class at any time when the instructor is not present. In each of the living rooms there is also a senior of the room (*Stuben-ältester*), who is responsible for the prevention of irregularities and disputes in the room, and is required to report misconduct to the officer on duty.

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* "Attendance at lectures and the various practical exercises is to be treated "strictly as military duty, and the delivery of a lecture by an instructor is to "be regarded in the same light as the oral instruction given by a military "superior to soldiers standing in the ranks." (Regulations for the discipline of the war schools.)

General regulations.

In many matters of detail there are considerable restrictions in regard to the conduct of the students within the school. No smoking is at any time allowed in the bedrooms, and even in the sitting-rooms it is forbidden during the hours of evening study. In other respects there is no restriction upon smoking during the hours of recreation. At night all lights are put out at a quarter past 10, and no conversation is permitted after that time in the bedrooms. Visitors are only admitted during the recreation hours in the afternoon. The introduction of wine, beer, or spirits into the rooms is forbidden; cards, dice, and all games of hazard are strictly prohibited. During the hours not employed in duty the

Conduct outside the school.

students are free to leave the school buildings; outside the school they are required to conduct themselves exactly as officers, and would be punished for any conduct in public which would be looked upon as unbecoming in an officer. As a rule, they are allowed to go where they please in the town, but certain *restaurants* of a low character are put out of bounds; the general rule laid down for their guidance is that they should only frequent places where an officer in uniform could be seen. They are always required to appear properly dressed in uniform; plain clothes are never allowed under any circumstances, and are indeed taken away from any who have them in their possession on joining the school. Getting into debt, when discovered, is punished with arrest, and a repetition of the offence invariably leads to dismissal from the school. Intoxication, which appears to be a very rare offence,

Conduct marks.

is similarly punished. At the end of each quarter a meeting of all the officers and instructors of the school is held, at which the conduct of all the students is discussed, and marks —called "censures"—are decided upon for each. These conduct marks have no direct influence upon the result of the final examination, but indirectly, as will be seen when speaking of the examinations, they often affect to a considerable extent the young ensign's prospects of promotion.

Medical inspections.

The ensigns are medically inspected once a month. Any concealment of venereal disease is punished; and those found suffering from it are required, under pain of punishment, to name the individual from whom they contracted the disease.

Duelling sanctioned.

As a means of preventing bullying, it is found necessary to sanction duelling, but it is carried on under certain restrictions, and is controlled by the authorities of the school. The senior ensigns of the inspections (*Dienst-ältesten*), under the presidency of one of the inspection officers, form a board of honour, by which all quarrels are investigated; the board decides in each case which of the disputants is in the wrong,

and whether it is necessary that a duel should take place; if so it is fought with swords, much in the same style as the duels among the students at the German universities. After the duel the disputant who has been pronounced by the board of honour to be in the wrong is punished by the director of the school. Several duels are said to occur every month, but, as at the universities, they never lead to fatal consequences.

Punishments.

The punishments inflicted consist of:—

(1.) Punishment parade (*Strafrapport*), which consists in the offender being obliged to report himself in full dress to the officer on duty at fixed hours during the day.

(2.) Deprivation of leave for three days.

(3.) Open arrest (*Stuben-arrest*), during which the offender is confined to his room during his free time, but attends all lectures and duties.

(4.) Close arrest in the arrest room of the school (*Kasernen-arrest*).

(5.) Arrest in the garrison guardroom (*Wacht-arrest*).

(6.) Dismissal from the school.

Arrest carries with it no deprivation of diet, with the single exception that beer is not allowed. The special punishments for those who are reported idle are deprivation of leave on Sundays, and being kept up during the Christmas and Easter vacations.

Powers of the various officers in regard to punishment.

The minor punishments can be inflicted by any of the officers of the school, but must at once be reported to the director. Arrest, as a punishment for a definite period, can only be ordered by the director, but any officer can place an ensign under arrest for misconduct, as a preliminary to the offence being brought before the director, who investigates the case and decides upon the duration of the punishment. The officer who reports the case is not required to be present at the investigation unless the ensign denies the offence. The powers of the director in regard to sentences of arrest are the same as those of the commanding officer of a regiment; the length of sentence which he can inflict is three weeks. He cannot on his own authority order a court-martial upon an ensign at the school, but in case of his thinking one necessary, must apply for it to the commander of the army corps within which his school is situated. In other respects his authority in regard to discipline is almost supreme. He is independent of the military authorities of the district, and is responsible for the exercise of his powers only to the Inspec-

The director is almost uncontrolled in his power.

tor General of Military Education. The ensigns during their stay at the school are placed under his immediate command, and for the time being he occupies towards them the position of the commanding officer of their regiment. He is empowered either for idleness or misconduct to send any of the ensigns back to their regiments; he has to make no application for authority to do this, but merely reports the fact, and states his reasons for the measure to the Inspector General of Education. There is no appeal against his sentence; an abuse of power on the part of the director would lead to his being reprimanded, and perhaps to his losing his appointment; but his authority in the particular instance would still be upheld; the ensign dismissed would not be reinstated in the school.

He has the power of dismissal.

Effects on the maintenance of discipline.

The large powers given to the director in this respect naturally greatly facilitate the maintenance of discipline. The least serious result of dismissal from a War School is, that an ensign's promotion to the rank of officer is retarded for nearly a year. He must come up for another course at the War School, and commence his work over again with a new set of students. Moreover, if his dismissal has been occasioned by any disgraceful or ungentlemanlike conduct, the probability is that the officers of his regiment would consider him unworthy of admission to their body, in which case he would have to complete his period of service in the ranks. The age of the students on an average varies from 19 to 24, for though some enter the War Schools at 18, cases of admission at so early an age are very rare. It might be thought that there would be some difficulty in subjecting young men of 24 to the strict *régime* of the schools, but it does not appear that in practice any such difficulty occurs. On the contrary, the director of the school at Hanover stated that, as far as his experience went, the older students were generally more amenable to discipline than the younger, as they were better able to understand the necessity for the restrictions which to the younger appear irksome and unreasonable.

No difficulty arises from the age of the students.

Importance attached to gentlemanlike conduct.

While on the one hand the young ensigns at a War School are in many respects treated almost as private soldiers, with the view of accustoming them to the simplicity and restrictions of barrack life, and of training them in habits of military discipline, they are on the other hand constantly taught to bear in mind that their conduct must be such as becomes those who are candidates for the rank of officer. Any disgraceful action, anything that would be considered unbecoming in an officer, is most severely punished. The inculcation of honourable and gentlemanlike feelings, and the encouragement of the *esprit de corps* which in so marked a manner

characterizes the whole body of Prussian officers, are in the regulations for the War Schools insisted upon as strongly as the enforcement of habits of military discipline.

Examinations and Results of the Course of Instruction.

Every three months examinations, both on paper and *vivâ voce*, are held to test the progress of the students in each subject. These examinations are held without previous notice being given; an hour is allowed for the written examination in each subject. At the end of each quarter, and at the termination of the practical course of instruction, reports are sent in by all the professors, in which marks called "censures" are assigned to the various students on the system of predicates ordinarily employed in the Prussian schools. These marks are awarded in each of the theoretical subjects under the various heads of ability (*Fähigkeiten*), attention (*Aüfmerksamkeit*), diligence (*Fleiss*), and progress (*Fortschritte*). The marks or censures so assigned are founded not solely on the results of the quarterly examinations, but on a general consideration of the manner in which each student has acquitted himself during the quarter. The usual numerical value is attached to the predicates, and the marks thus gained by each student are made public at the end of every quarter; but so great is the desire to avoid exciting anything like competition, that the names of the students are not announced; everyone has a number assigned to him which is known only to himself, and the marks he has gained are published only in connexion with his individual number. The quarterly reports also include censures on the student's attainments and progress in drill, gymnastics, riding, and on his general conduct, but no numerical marks are assigned to these subjects. The censures for conduct are determined upon at a general meeting of all the officers and instructors of the school.

Quarterly examinations.

System of marks employed, founded on quarterly reports by the instructors.

The quarterly censures do not directly affect the result of the final examination; but indirectly they do so, as in order to obtain permission to go in for the examination a student must have obtained a certain number of marks during the year. At the termination of the course, and before the final examination takes place, the director calls a general meeting of all the instructors, at which the mean number of marks to be assigned to each student for his general attainments in the theoretical subjects of instruction during the year, is determined. The various periodical censures are produced, and from these the mean numerical credit is deduced, to

Influence of the periodical censures on the examinations.

which every individual is entitled in each subject.* These mean credits are multiplied by the numbers representing the relative importance of the various subjects, which are as follows:—

Tactics and military regulations - - -	5
Science of arms - - - - -	5
Fortification - - - - -	4
Topography and surveying - - -	3
Military correspondence - - - -	3
Drawing - - - - -	1
Total - - -	21

The product represents the marks gained in each subject, and on the total aggregate of the marks in all the subjects depends the question whether a student can be allowed to go in for the final examination.

Conditions of admission to the examination.

The maximum number of marks which can be gained, on the supposition that the predicate excellent (*vorzüglich*), numerically represented by 9, is obtained in each subject, is 189 (9 × 21). Out of these, 105—or a general mean of 5 ("satisfactory") in each subject—ought in strictness to be gained, in order to obtain the necessary certificate of fitness for the examination. Some latitude, however, is allowed in this respect; though a student has only obtained 96 marks, the director and instructors have the power of admitting him to the examination, provided his proficiency in drill, riding, and other practical work, and his general conduct (for none of which numerical credits are given) are satisfactory. If a student's marks fall below 96 but amount to 91, his case may be referred by the director of the school to the Inspector General of Education, and, provided his general conduct has been good, he generally obtains permission to go in for the examination. If, however, his marks are less than 91 no latitude is allowed; he is obliged to leave the school, and his examination is deferred to some future occasion. The question of admitting a student to the examination is thus dependent on his industry and conduct during the course of instruction, and is in ordinary cases decided by the authorities of the school.

Examination at the end of the course at the War Schools.

The final examination, which determines an ensign's fitness for the rank of officer, was formerly held at Berlin, but now takes place at the War Schools. It is, however, conducted

* A table showing the system on which the quarterly censures are awarded, and the final censure determined from them, will be found in the Appendix, page 567.

under the superintendence of the Supreme Examination Commission. The examination, as is always the case in Prussian schools, is simply a qualifying one; it is partly on paper and partly *vivâ voce*. General directions are given in both cases, that the examiners shall look mainly to the question whether the candidate has sufficient positive knowledge of his subjects, and capacity to explain and express himself, that mere lapses of memory shall not be regarded, and that natural endowments shall be principally looked to. The paper work occupies about four days; the questions are set by the Examination Commission and sent from Berlin, but the answers are looked over and marked by the instructors of the school. Only two or three questions are set in each subject, but considerable time is allowed for answering each, and, as in the *Portepée-fähnrich* examination, much importance is attached to the style and arrangement of the answers, and to the general power and ability shown in the treatment of the subject. The character of the examination will be shown by the following paper of questions, which was that set at the recent final examination at the War School at Hanover, and has been furnished by the kindness of Lieutenant-Colonel Berger, the director of the school.

Mode of conducting the examination on paper.

I. *Tactics.*

Examination questions.

(1.) What are the objects of an infantry square? in what different ways can it be formed; and how is it formed by the Prussian infantry when the sections of skirmishers occupy a central position in the rear of the column? (To be illustrated by a diagram.)

(2.) In what respects does the conduct of an advanced guard during an advance differ from that of a rear guard during a retreat? What order of march would be adopted by the commander of a detachment consisting of two battalions, one company of rifles, two squadrons, and four guns, if compelled to retreat from Thisow to Steinberg by way of Biske?

(3.) What principles determine the occupation of defiles for defensive purposes? What are the special dispositions to be made by the commander of a detachment consisting of one and a half battalions, two companies of rifles, two squadrons, and four guns, if ordered to defend the two bridges at Weilburg against an enemy advancing in superior force from the west?

II. *Science of Arms.*

(1.) Of what parts does the fuze of the shells for the Prussian rifled guns consist? What is the object of each part of it, and how is its ignition effected? What are the advantages and disadvantages of this fuze?

(2.) What requirements should be fulfilled by carriages for field, siege, and garrison guns; and how are these requirements fulfilled in the case of the Prussian artillery?

(3.) What are the various effects which can be obtained by the fire of the projectiles of the Prussian guns, and what are the different kinds of objects against which the respective effects are employed?

(4.) A comparative description of the needle-gun and of the Chassepot rifle.

III. *Fortification.*

(1.) On what grounds is a preference given in field fortification to detached works as compared with continuous lines; and under what circumstances should open, semi-enclosed (*halbgesehlossene Werke*), or enclosed works be constructed?

(2.) What are the requirements of a military bridge, and how far are they satisfied in the service pontoon bridge?

(3.) What are the objects of the caponnière of the main ditch in the polygonal trace; and in order to fulfil these objects, what plan, interior arrangement, and cover from fire should be given to it?

(4.) What measures does the defender of a fortress adopt after the opening of the second parallel, in order to impede the further progress of the attack?

IV. *Topography and Surveying.*

(1.) What various objects were sought to be attained in the construction of the "Kippregel," and how far does it fulfil the requirements of a useful instrument for purposes of military surveying?

(2.) How is the altitude of a station calculated, if that of two other points in the trigonometrical triangulation is known, the angle of depression of one of which has been observed?

(3.) On what principles does the possibility depend of accurately representing elevations and depressions

of ground on a plan drawn on a horizontal projection; and in what manner is this effect specially attained in Prussia?

V. *Military Regulations and Correspondence.*

(1.) Lieutenant A., of the th Regiment of Infantry has been sent with a detachment of 50 men to Z, on the Russo-Polish frontier, to prevent the importation of the Rinderpest. He sends a report to the commanding officer of his battalion on the state of affairs there, and the measures which he has adopted.

(2.) What is the object of the courts of honour (*Ehrengerichte*) for officers? What is their special constitution, and what is their method of procedure in deciding upon questions of honour?

The subsequent *vivâ voce* examination.

After the paper work is concluded the school is visited by General von Holleben, president of the Examination Commission, and two other members of the Commission, in whose presence the *vivâ voce* examination takes place. The commissioners, however, do not act as examiners; the questions are put, and the marks for the answers are awarded by the professors of the school; but the marks so given are subject to revision by the members of the Commission, and, as in the quarterly examinations, no student is examined by the instructor of the class to which he belongs. The students are taken in divisions of six together, and are subjected to examination for about an hour in each subject.

The examination is only in theoretical subjects.

The examination is confined to the theoretical subjects of instruction, and does not extend to drill and practical exercises. In drawing proficiency is estimated both by drawings done at the examination, and by those previously executed in the course of the year. The candidates' answers in each subject are marked on the ordinary system of *predicates*, and the relative importance of the various subjects of examination is the same as that assigned to them in the school course.

Decision as to the results of the examination.

After the conclusion of the whole examination, a meeting of the members of the Examination Commission and of the authorities of the school is held, at which it is determined what students are entitled to a certificate of fitness for the rank of officer. This question is decided, partly, by the results of the examination, partly, by a consideration of the student's general conduct at the school, and his practical proficiency in military duties. To assist the meeting in arriving at a decision, the quarterly censures given by the

authorities of the school, as well as the marks gained in the examination, are laid before them.*

Conditions necessary to obtaining a certificate.

In order to pass the theoretical examination, the predicate of "satisfactory" (*befriedigend*) in each subject, or a total number of 105 marks out of 189, must be obtained; but even though this condition be fulfilled, it does not follow that an ensign is recommended for promotion to the rank of officer. This recommendation depends also on moral and personal, as well as on intellectual qualifications; and on the other hand exemplary conduct, industry, and practical military qualities are often allowed to compensate for a partial failure in the theoretical examination. The decision arrived at in the case of each student is, in fact, more determined by a general consideration of the circumstances of his case, and by the probability of his making a good and practical officer, than with reference to any fixed standard of qualification.

Those who obtain the necessary certificate receive their commissions.

No list of the result of the examination is published; those condidates, however, who have passed with distinction (*vorzüglich*) are mentioned by name in the presence of the assembled school, and the names of those who have failed are also announced. Each ensign on leaving the school returns to his regiment, to which a final certificate (*Abgangszeugniss*) is forwarded by the director of the school, stating whether he has passed the examination, and, if so, whether his general conduct has been such as to prove him fit for the rank of officer.† If this is the case, the commander of the regiment applies at once to the Supreme Examination Commission in Berlin for the ensign's certificate of fitness for promotion to the rank of officer (*Reife-zeugniss zum Offizier*), and his promotion takes place when a vacancy occurs, provided he is accepted by the officers of his regiment.

Course pursued with those who pass the examination, but whose certificates are deferred.

In the case of those who obtain the qualifying number of marks in the examination, but whose character or personal qualities are not satisfactory, the report forwarded by the director of the school to the regiment states this fact, and the application for the certificate which is a condition of promotion must then be deferred, until by his conduct in his regiment and attention to his military duties the ensign has shown himself fit for the rank of officer. At the end of the fixed period of probation, the commanding officer of the regiment forwards a report regarding him to the Supreme Examination Commission. Students who by the preliminary

* A table showing the marks gained in the various subjects of the examination, and the final decision of the Board, is drawn up for each student in the form given in the Appendix, page 568.

† A specimen of the certificate is given in the Appendix, page 569.

decision of the school authorities are refused permission to go up for the examination, or who having been admitted to it fail to pass, are allowed to offer themselves at a subsequent examination at the expiration of three, six, or twelve months, according to circumstances. They are, however, seldom admitted to a second course at a War School, as it is considered that they have already had ample opportunity of instruction afforded them; but their preparation for the examination is left to themselves, and their examination takes place before the Supreme Examination Commission in Berlin. Should they a second time fail to pass the examination, a third trial is only allowed under very exceptional circumstances by the special permission of the King, which is rarely granted. Ordinarily a second failure disqualifies a candidate for promotion to the rank of officer.* In such a case a young man would probably be transferred from the active army to the Reserve, and would there have to complete his term of military service in the ranks. Cases of this sort very seldom occur; indeed, failures in the officers' examination at a War School are extremely rare; the careful instruction given at the school is, with moderate industry on the part of a student, sufficient in most cases to assure his coming up to the required standard; if he has been idle and is unlikely to pass the examination, the school authorities do not admit him to it; and when a break-down in the examination does occur, conduct and personal qualities are taken into consideration. It is only when failure in the examination is combined with a general bad character, or with very marked deficiency in military qualifications, that a candidate is plucked. Not more than two or three cases of failure occur at each school yearly.

Those who fail to pass the examination, allowed a second trial.

A second failure entails the forfeiture of the commission.

Failures rarely occur.

Some difference of opinion exists in regard to the expediency of holding the officers' examination at the various War Schools, instead of before the central Examination Commission at Berlin. It probably leads to some want of uniformity in the system of examination, as the *vivâ voce* examination is conducted by the instructors of the respective schools, and the marks for the answers are awarded by them. On the other hand, it is urged that by giving an opportunity for personal explanations between the authorities of the school and the members of the Examination Commission, the moral and personal character of the students can be better ascertained, and that more consideration can be paid to practical

Advantages and disadvantages of the system of holding the examinations at the War Schools.

* Dismissal from the school previous to the examination is not considered a trial. A candidate may present himself twice for actual examination.

military qualifications in the case of those who might fail in a purely literary examination.

Commissions not obtained immediately after quitting the school.

On joining their regiments the ensigns who have passed the examination and are otherwise declared qualified for promotion, are in exactly the same condition as those who pass the officers' examination at Berlin, without attending a War School. They have still to wait for vacancies before obtaining their commissions, and to undergo the further ordeal of approval by the officers of their respective regiments.

Absence of competition at the schools.

It will be seen that there is no system of competition among the students at the War Schools. No prizes of any sort are offered as a stimulus to exertion. The only reward held out to peculiar ability or industry is that of being mentioned by name when the result of the final examination is announced; and in a few cases those who have passed a very brilliant examination are specially recommended for an expression of the King's commendation (*Königs Belobigung*). This, however, is a very rare distinction, which is never gained by more than two or three students at the utmost, and in many years it is not obtained by any. The only immediate practical result of such a distinction is that the recipient of it is commissioned before any other ensigns in his own regiment who may be waiting for vacancies; the fact of his having obtained this distinction is, however, noticed in the young ensign's records of service, and may probably be of some indirect advantage to him in his future career.

Competition is even directly discouraged.

Not only is there no attempt made at the War Schools to give a stimulus to competition, but the wish even seems to be to discourage anything like a competitive spirit, partly from a desire to prevent any school-boy feeling among the students, who are always taught to look upon themselves as soldiers and men, partly from a fear that it might lead to jealousy and ill-feeling among them, and diminish the spirit of *Cameradschaft* to which so much importance is attached in the Prussian army. On more general grounds also the adoption of a system of competition is objected to, both at the War Schools and at all the other military schools in Prussia. Regarded as an educational instrument, it is considered that a system of competition would prevent individuals from devoting special attention to those subjects of study for which they have a natural taste, and would produce general mediocrity, instead of a high degree of excellence in particular branches, which is one of the great objects aimed at in Prussian military education. It is argued also that more work is got out of the whole body of the students when all have the same prospects before them, than when rewards are

General objections entertained in Prussia to the competitive system.

offered only to a few; as in the latter case the great majority, feeling that they have no chance of distinction, lose heart and become idle. But the great objection to the adoption of a competitive system appears to be grounded on the impossibility of making any examination a trustworthy test of all the qualities—personal and practical, as well as intellectual—which go to form military capacity. It was maintained by the authorities of all the schools that the difficulty cannot really be obviated by the French system of awarding marks for practical work, because it is impossible to estimate mathematically the comparative merits of individuals in practical qualities. Wide distinctions may be determined; it may be said, for instance, that one individual is a much better drill, rider, or fencer than another; but it is impossible to determine minute shades of difference with sufficient accuracy to attempt to arrange candidates strictly in order of merit. Hence, in adopting a competitive system in military examinations, either educational attainments must be alone considered—thus leaving out of sight the qualifications which in a military man are most important, and rendering it possible for the highest distinction to be gained by a candidate who is practically useless as an officer—or a delusive endeavour must be made to arrange candidates in order of merit in reference to character and practical qualities, by which injustice will almost invariably be done to individuals.

Difficulty of establishing a competitive estimate of military qualifications.

It is maintained that the Prussian system of giving general certificates, determined upon after formal deliberation amongst all the instructors and officers with whom a candidate has been brought in contact, affords a much more trustworthy criterion of the merits of individuals than could be furnished by any competitive examination. It may be observed in reference to this question that, even at the French schools, where the competitive system is so thoroughly carried out, the difficulty of estimating practical ability and conduct by a graduated scale of marks seems to be felt.

The system of certificates of qualification preferred.

While, however, there is this total absence of all competition among the students at the War Schools, there is sufficient stimulus for them to work in the knowledge that, if they fail to pass the examination at the end of the course, their promotion to the rank of officer will be considerably delayed —that in the meantime they will have to continue serving in a subordinate position—and that although another chance will be allowed them, a second failure will finally disqualify them for a commission, in which case they will have to complete in the ranks the term of military service to which every Prussian is liable. This prospect, with the strict discipline

Incentives to industry among the students.

Punishments attached to idleness.

enforced, is amply sufficient in almost all cases to ensure at least moderate industry. Those in whose case it is found impossible to trust to voluntary action, are made to study under surveillance, and forfeit their free time in the evening; if this does not secure industry, deprivation of leave on Sundays and during the vacations follows; and lastly, those who show a confirmed disposition for idleness are dismissed from the school and sent back to their regiments. Not more, however, than three or four cases of dismissal on this account occur in a year.

Annual inspection of the schools.

All the War Schools are minutely inspected every year by General von Peucker, the Inspector-General of Military Education; in addition to this, an annual report is forwarded to him by the director of each school on the general state of the establishment; and the report is accompanied by specimens of the drawings and reports executed by the students—the three best compositions, the three worst, and the three representing the average in each subject being selected for this purpose—in order to enable the Inspector-General to form an opinion of the system of instruction at each school.

Favourable opinion entertained of the working of the War Schools.

The greatest satisfaction appears to be felt in Prussia with regard to the present working of the War Schools, and the excellent results that have followed from the improvements made in their system 10 years ago. A stranger can hardly fail to be struck by the gentlemanlike tone and general smartness of the students, and by the happy results of a system which while enforcing the strictest military discipline, constantly appeals to a sense of honour, and succeeds in securing on the part of the young ensigns the feelings of self-respect and the propriety of conduct of officers. The strictly practical character of the instruction and the system of discipline both appear admirably calculated to fit the War Schools for the important position which they hold as establishments for providing a professional training for candidates for commissions.

THE UNITED ARTILLERY AND ENGINEER SCHOOL.

(*Vereinigte Artillerie-und Ingenieur-Schule.*)

General Organization.

Changes in the system of obtaining commissions in the artillery and engineers since 1856.

The Artillery and Engineer School has undergone great changes since it was visited by the Commissioners of 1856. At that time the course by which candidates for the artillery and engineers obtained their commissions was somewhat different from that followed in the case of candidates for the line. The former, though passing the usual examinations for the rank of *Portepée-fähnrich* and officer, did not, like the latter, go through the Division Schools, which then corresponded to the present War Schools. After entering the service and serving for nine months with their regiments, they were sent to the Artillery and Engineer School, where they remained for a period of three years. At the end of the first year at the school they passed the ordinary officer's examination like candidates for the line, and received provisional commissions; the remaining two years at the school were devoted to their special instruction as officers of the scientific corps. This system was altered in 1865. Officers of the artillery and engineers now follow in every respect the same course as those of the line up to the time of passing their officer's examination; the preparation for this examination is similarly given to them at a War School, instead of at the special arm school as formerly; and the time spent by them at the latter establishment has been reduced.

Present mode of officering the artillery and engineers the same as for the line.

Young men who are candidates for commissions either in the artillery or engineers receive no special education before entering the army; they select the service they wish to enter like candidates for the line; they join their regiments either as scholars from the Cadet House or as *Avantageurs* with a nomination from a colonel of artillery or engineers; they pass the usual examination for the grade of *Portepée-fähnrich;* they perform a certain amount of service with the troops, the period of which, as in the line, must be at least five months, and in their case is usually nearly a year; they attend a War School for 10 months; at the end of the course of instruction there they pass their examination for the rank of officer, and as vacancies occur they are, subject to the approval of the officers of their regiments, recommended for commissions. If they come from the Selecta or Ober-prima of the Cadet House they are exempted from the course of instruction at a War School, and those who come from the former class have, as in the line, the privilege of joining their corps as officers.

Reasons for the introduction of the present system.

The causes which led to the system of requiring candidates for the artillery and engineers to pass through the War Schools, like those for other arms of the service, were partly connected with discipline, and partly based upon considerations of a more general nature. In regard to discipline it was found objectionable to collect a number of young ensigns, who had only entered the service a few months, in Berlin, where the Artillery and Engineer School is situated, and where comparatively little control could be maintained over them. On more general grounds also it was thought desirable to establish a greater identity of feeling among the whole body of officers of the army, by giving them all an education in common up to a certain point. Under the former system the officers of the artillery and engineers, owing to their being educated apart, seem to have been regarded to a certain extent as distinct from those of the other arms, and as forming a *clique* by themselves. One of the main objects of the change was to remove the grounds for this feeling, and to establish a complete sympathy between the officers of the scientific corps and those of the other branches of the service.

Candidates for the scientific corps have now the same education as those for the line up to a certain point.

But at first only receive provisional commissions, until they have had special instruction.

The system for all is, therefore, now the same up to the time of the officer's commission being obtained, with the single exception that in the *Portepée-fähnrich* examination a slightly higher standard in mathematics must be reached by candidates for the artillery and engineers. The commissions obtained by the latter, however, after passing the usual officer's examination, are only provisional. The young men are officers in the army (*Armee-Offiziere*), but in their own corps they are only supernumeraries (*Ausseretatsmässigen*); and before actually becoming officers of artillery or engineers they have to go through a course of special instruction at the Artillery and Engineer School, and to pass a further examination in subjects connected with the duties of their respective arms (*Berufs-prüfung*).

Recent changes in regard to the special instruction of officers of the artillery.

In regard to the mode in which this course of special instruction is carried out, an important change has been made within the last year. Hitherto candidates for both services have been required, after leaving a War School, to return to their regiments, and serve with them as supernumerary officers for a year, learning their practical regimental duty. They were then sent to the Artillery and Engineer School, where two years were passed chiefly in theoretical instruction. At the end of each year an examination was held in the subjects of instruction, and those who successfully passed both examinations were, at the end of the

second year, definitively commissioned as second lieutenants of artillery or engineers. This course is still pursued with regard to those who belong to the engineers; they first pass a year in practical instruction with their corps, and then attend the special school for two years. Those of the artillery, however, have now first to spend at least two years with their regiments in learning the practical duties of regimental officers before going to the special school; it is only in the third year after obtaining their commissions—or when they have been in the service on an average for a period of nearly four years—that they commence their special course of instruction. The length of this course is now, however, in their case ordinarily limited to a single year. At the end of a year at the Artillery and Engineer School they are subjected to an examination. The majority of those who pass receive definitive commissions as officers of artillery and return to their regiments. Thirty only of the best students are, with their own concurrence, retained a second year at the school, to go through a higher and more scientific course of instruction in a special class or Selecta. Officers who have previously been through the ordinary year's course at the school, may also, at a later period of their service, be admitted to the select class, if specially recommended for it by the Inspector General of Artillery. The total number of students in the class is, however, under no circumstances to exceed 30.

The ordinary course of instruction is one year.

Extended in special cases to two years.

Such is the system as recently modified by an order which appeared in July 1868. The system only came into force for the first time with the re-opening of the school at the commencement of the school year on the 1st of October; the students of artillery who then joined the establishment entered it under the new system, but those who had already been a year at the school had still to complete their second year's course under the old arrangements. The institution is, therefore, at the present time, in a transition state; the new system is not yet fully in operation, and the select artillery class will for the first time be formed at the commencement of the next school year.

Present transition state of the school.

The main object of the change of system was to give a more strictly practical character to the instruction of the artillery students, A more thorough acquaintance with practical regimental duties is secured by making them serve two years with their regiments instead of one, as formerly, before entering the school. A better groundwork is thus afforded for the subsequent scientific instruction, which has also been considerably altered in character, as it was

Object of the change to make the training of the artillery more practical;

found under the old system to be too theoretical, and especially too mathematical. Formerly a great deal of time was spent on drawing guns, carriages, and other artillery *matériel*, which has been now much curtailed. An extensive course of lectures was given in the literature and history of artillery, a subject which has now been abandoned as being practically of little importance. The extent to which mathematics were carried has also been much reduced. It seems to have been found that it was useless to make the majority of the students spend a large amount of time on mathematics if they had no natural inclination for the subject; and instruction in the higher branches is now exclusively reserved for those who show mathematical ability and may wish to pursue the study during a second year in the select class. It is considered that all the knowledge which is practically required in artillery officers can be obtained in one year, and that it was waste of time to keep them for a second year away from their regiments, studying merely theoretical subjects which were of little practical value to any, and the study of which could only be pursued to advantage by a few. By reducing the ordinary artillery course to one year, it will also be possible to diminish the number of the students at the school, which under the old system seems to have been considered too large for proper superintendence and instruction.

and to exclude subjects of instruction which were not professionally useful;

and especially to curtail the course of mathematics.

Admission to the Artillery and Engineer School.

Admission to the school is not dependent upon an examination; officers are ordered to it in their turn by the Inspectors General of their respective services. The average age of the students on joining the school is from 22 to 23. There is no fixed number of annual admissions: it depends on the requirements of the service, and varies considerably from year to year. Last year 120 new students were admitted, while this year the number was only 80; on the present occasion the number of admissions from the artillery was restricted to 50, but it is not intended to maintain this restriction. The admissions from the engineers generally amount to between one-fourth and one-third of those from the artillery. At present there are 249 students at the school, of whom 181 belong to the artillery, 53 to the engineers, and 15 are officers from Saxony and Wurtemberg. When the new system has come fully into operation it is expected that the maximum number of students will be about 170, of whom from 100 to 120 will belong to the artillery (including the 30 retained for a second year's course at the school), and from 50 to 60 to the engineers.

Number of students.

The students of each year constitute a division, or *Cœtus* as it is termed, by themselves; the lower Cœtus is formed

by the students of the first year; the upper Cœtus by those of the second. Of those annually admitted the great majority have entered the army from ordinary places of civil education, the minority only have passed through the Cadet Corps; during the last year's course, 36 per cent. of the artillery, and only 25 per cent. of the engineers had previously been cadets. Of those who have been at the Cadet House most have entered the army in the usual manner from the Prima; a few only have been in the Ober-prima or Selecta. It appears that a considerable number of the artillery students, and by far the greater portion of those of the engineers, are *Abiturienten—i. e.*, are men who have completed the full course at a *Gymnasium* or *Real-Schule*, and have passed the examination which qualifies for admission to a university. It was stated that on an average 33 per cent. of the artillery, and 76 per cent. of the engineer students belong to this class. At the present time the whole of the 50 artillery students of the junior division, or *Cœtus*, admitted on the 1st of October, are *Abiturienten*. The director of the school remarked that, though in some of the practical work the advantage is perhaps on the side of those who have passed through the Cadet Corps, the *Abiturienten* show a very marked superiority in all the scientific subjects of instruction. He expressed a decided preference for the latter, on the ground that officers should possess "the same "liberal education and cultivation of mind (*Bildung*) as the "educated public."

Previous places of education of the students.

Number of *Abiturienten*.

Superiority of this class of students.

With regard to administration, the school appears to be somewhat less under the control of the Inspector General of Education than most of the other military schools. Annual reports on the course of instruction, and detailed accounts of the progress of each student, are forwarded to him; but the general superintendence of the establishment rests mainly with the Inspectors General of the two services—the artillery and engineers. These two officers are the *Curators* of the school, and form the *Curatorium*. All selections for appointments in connexion with the school are made by them, and any alterations in the system of instruction or other arrangements require their sanction. Under the Curators a general supervision over the school is exercised by the *Inspector*, who is an officer taken from that one of the two services to which the director for the time being does not belong. The immediate management in regard to discipline, finance, and the ordinary routine of the school is entrusted to the latter officer, who is a field officer of the artillery or engineers, and has the rank of commandant of a regiment. He has a captain,

Government of the school.

The Curators.

The Inspector

The director.

The direction officers.

appointed by the *Curatorium*, as his assistant. Four officers, three from the artillery and one from the engineers, acting under the director, are charged with the care of discipline and order, and are called the "*direction* officers." The duties of paymaster and librarian are discharged by some of their number, but none of them take any part in the instruction.

Board of Studies.

There is, as usual in the Prussian military schools, a Board of Studies, of which the director is president, the members consisting of the senior professors of mathematics and artillery (the former a civilian), the professor of special engineering in the upper Cœtus, and an equal number of officers of the two services appointed by the Curators. The Board arrange the programmes of the course of instruction, and select the text books to be employed. Each instructor is required to draw up a general outline of his course of lectures, which is subjected to the approval of the Board.

Their duties.

But the Board of Studies seem in addition to have a larger share of executive duties at this establishment than at most of the other Prussian schools, and to be brought more in contact with both the instructors and students. They are not merely a consultative council, called together for the purpose of giving advice regarding the course of instruction. The members are required from time to time to attend the lectures and the practical instruction, so as to exercise a supervision over the system pursued by each instructor; the essays and memoirs written by the students are sent in to the Board, and are looked through by the members; the Board also draw up the reports on the progress of the students founded on the marks or censures awarded by the instructors; they decide whether the industry and attainments of each student are such as to entitle him to go in for the final examinations; and in case of idleness they can recommend the removal of an officer from the school.

The instructors.

For purposes of instruction there are 15 military and 11 civilian professors; the former are selected chiefly from the artillery and engineers, but at the present time two officers of the General Staff are employed as professors of tactics. It is not necessary that an officer should have passed through the War Academy in order to hold an appointment as professor at the school.

Their salaries.

Both military and civilian instructors are paid according to the number of lectures they give. The highest remuneration given to a civilian professor is 75 thalers (11*l.* 5*s.* 0*d.*) for one lecture a week during the school year; the military professors only receive 25 thalers (3*l.* 15*s.* 0*d.*) for the same work, in addition to their regimental pay. The number of weekly lectures given varies considerably, some of

the professors giving as many as 16, others not more than four or five. The rates of remuneration are spoken of as being scarcely sufficient to attract a very first-rate class of men as instructors; there is also considerable uncertainty in the tenure of the appointments, as the services of any of the professors can be dispensed with on three months' notice, and no pension is allowed.

Establishment.

The whole establishment of the school is as follows:—

General Staff.

1 director, a field officer of artillery or engineers.
1 assistant director, a captain.
4 direction officers, first lieutenants, three of the artillery and one of the engineers.

Instructional Staff.

15 military professors, viz.:—

8 officers of artillery, 5 officers of engineers. } For instruction in artillery, fortification, engineering, hydraulic construction, military drawing and surveying, and military history.

2 officers of the General Staff, for instruction in tactics.

11 civilian professors, viz.:—

5 professors of mathematics.
1 professor of chemistry.
1 „ physics.
1 „ French.
1 „ architectural drawing.
1 „ figure and landscape drawing.
1 „ veterinary science.

Annual expense.

The annual expenditure in connexion with the school averages about 20,000 thalers (3,000*l.*); this sum, however, includes only the expenses of the actual instruction, exclusive of the regimental pay of the officers and students, the cost of the maintenance of buildings, &c. No payment is required from the students.

The school buildings.

The school is situated in the principal street of Berlin, *Unter den Linden*, near the Brandenburg Gate. None of the students live in the building, all having to provide themselves with lodgings in the town. There is, however, a mess establishment in the school, and those for whom there is room—about 140 in number—mess there; the remainder have a mess at an adjoining restaurant. The mess establishment, which is on the second floor, is on a very complete scale; it consists of a suite of rooms comprising a large reading-

The mess.

room, a billiard-room, card-room, and a breakfast-room. There is also a large *salle-à-manger* on the ground floor.

Library. On the same floor with the mess is the library, which is well supplied with both German and foreign works on military and scientific literature. Both the professors and students have free access to the library and are permitted to take

Model rooms. books out of it. Above the library are the model-rooms and museum, containing models of artillery carriages and works of fortification, which, however, are not on nearly so extensive a scale as those at the French school at Metz. There is also a large collection of surveying instruments. On the

Lecture rooms. first floor are the lecture rooms, considerably larger than those at the Cadet House, but still intended generally for classes of not much more than 30 students. Two large halls on the same floor are especially devoted to drawing; they are fine and well lighted rooms, and have their walls hung with numerous topographical drawings, plans of fortifications, &c. On the ground floor are the offices, the officers'

Laboratory, &c. mess-room, a chemical laboratory, and a museum of electrical and scientific instruments used for the purpose of illustrating the lectures on physical science. The laboratory, though not large enough for more than six or eight operators to work together in at a time, is very completely furnished; the collection of scientific apparatus is excellent, and is said to be the best in Berlin after that of the university.

Course and Method of Instruction.

Duration of the course of instruction. The course of instruction at the school commences on the 1st of October of each year; its duration has hitherto, as already stated, been two years, or rather one year and three quarters, for the students of both services. In future, however, this long course will be confined to the engineers, and the 30 best of the artillery who may be retained for instruction in a select class; the ordinary artillery course will be com-

The theoretical and practical course. pleted in one year. The course is divided into two parts, theoretical and practical. The theoretical course commences each year on the 1st of October, and continues for nine months, until the 30th of June. After making all deductions for interruptions, it may be calculated to comprise about 35 weeks. The practical work, though carried on also to some extent during the whole of the year simultaneously with the theoretical instruction, is mainly executed during the months of July and August by the students of the lower Cœtus. Those of the upper Cœtus—*i.e.*, the second year's engineer students and the artillery select class—return to their regiments on the conclusion of the theoretical course at the commencement

of July. The greater part of the month of September in the first year is given up as a vacation to those who remain a second year at the school, and a few days are allowed at Christmas and Easter.

Subjects of study.

Formerly the instruction in certain subjects was common to the members of the two arms, viz.—in mathematics, French, physical science, fortification, and landscape drawing during the first year; and in mathematics, French, and chemistry during the second year. Under the new system, however, the instruction for the students of the two services is entirely distinct throughout, except in some parts of the practical work.

For the ordinary artillery students.

The theoretical instruction in the ordinary artillery course will for the future be confined to the following subjects:—

Artillery.
Engineering science and fortification.
Lower mathematics.
Applied tactics.
Physical science.
Chemistry.
Veterinary science.
Topographical drawing.

Changes recently made in the subjects of instruction for the artillery.

All these subjects are obligatory. The subjects which were formerly, in addition, taught to the artillery, but which are now excluded from the ordinary course, comprised higher mathematics, French, artillery drawing, military history, and landscape drawing. The time given to most of the subjects which have been retained, but especially to mathematics, has also been much reduced. On the other hand, topographical drawing and field sketching, which were not formerly taught to the artillery students, if they were found to have a sufficient previous acquaintance with them, have now been introduced as obligatory subjects.

For the artillery select class.

The programme of the course of instruction in the Selecta, or "Advanced Artillery Class," who remain a second year at the school, has not yet been finally decided upon. It will, however, besides higher mathematics, probably include most of the other subjects taught formerly to the artillery students, but now excluded from their ordinary course; in languages instruction will be given in French, English, and possibly also in Russian.

For the engineers.

The theoretical course for the engineers comprises:—

Artillery.
Engineering science and fortification.
Hydraulic construction.
Lower mathematics.
Higher mathematics (voluntary).

Applied tactics.
Physical science.
Chemistry.
Military history.
French (voluntary).
Theory of surveying.
Topographical drawing.
Fortification drawing.
Architectural drawing.
Figure and landscape drawing (voluntary).

Of these subjects artillery, tactics, physical science, the theory of surveying, and landscape drawing are taught only during the first year; hydraulic construction and chemistry are not commenced until the second year; the instruction in the other subjects is spread over both years.

Programme of the subjects of instruction for the artillery.

The following programme shows the subjects of instruction as taught to the students of the two services:—

I. *Ordinary Course for Artillery Students.*

Artillery.

Artillery.—Scientific principles connected with the *matériel* of artillery, and technical description of the objects. Machinery, ordnance, manufacture of ammunition. Theory of the construction of gun-carriages, limbers, and other carriages used for transport. Ballistics. General account of the organization of the Prussian artillery; its peace organization; arrangements for putting it on a war footing, and again reducing it. Organization of the artillery of foreign powers. Employment of field artillery in a campaign; duties on active service, marches, transport, &c. Artillery in action, its employment in combination with the other arms. Use of artillery in the attack and defence of fortresses, illustrated by historical examples.

Engineering science and fortification.

Engineering science and fortification.—The course is similar in its general character to that given to the first year's engineer students (described a little further on); but the subjects are treated with special reference to the duties of artillery officers.

Mathematics.

Mathematics.—The reduced course of mathematics proposed for the students of artillery under the new system is as follows:—

(1.) General revision of algebra, commencing with the theory of equations. (One month to be devoted to this.)

(2.) General revision of geometry, commencing with the computation of the areas of plane figures. (One month.)

(3.) Plane trigonometry and its applications. (One month.)
(4). The principles of lower analysis so far as they are required for the subsequent lectures. (One month.)
(5.) Solid geometry, and, so far as practically requisite, the main principles of spherical trigonometry. (Two months.)
(6.) Theory of co-ordinates and conic sections. (One month.)
(7.) The most important laws of mechanics with their practical applications. (Two months.)

Tactics. *Applied tactics.*—Influence of the configuration of ground upon modern operations of war, and upon the attack and defence of posts and positions. Consideration of orders of battle, tactical formations, the various kinds of engagements, &c. Marches, and precautions necessary on service. Historical examples illustrating the preparations for, and the actual course of a battle, and the means of reaping the full fruits of a victory.

Physical science. *Physical science.*—The course for the artillery is similar in character to that subsequently described for the engineers, but will probably in future be rather less extensive.

Chemistry. *Chemistry.*—The same remark applies as to physical science.

Veterinary science. *Veterinary science.*—Natural history and anatomy of the horse. Good and bad points. Feeding. Internal and external diseases; their symptoms; their treatment, so far as the means available on active service permit. Shoeing.

Topographical drawing. *Topographical drawing.*—This subject has not hitherto been taught to the artillery, but the course will probably be much the same as that given to the engineer students of the first year, with the addition of some instruction in field-sketching and reconnaissance, but without entering into the operations of more scientific surveying.

II. *Course for Engineer Students.*

First Year.

Programme of subjects of instruction for the engineers. First year. Artillery. *Artillery.*—Action of artillery. Theory of projectiles; the trajectory; characteristics of the various kinds of fire. Employment and effects of artillery in the field, and in the attack and defence of fortresses.

Engineering science. *Engineering science and fortification.*—Introductory account of the extent of the subject; means employed by the engineer service; permanent, provisional, and field fortification (the latter in its applications); science of the attack and defence of all kinds of entrenchments and fortifications.

The course is founded upon, and is a further extension of the course of field and permanent fortification as taught at the War Schools, with special reference to the duties of engineer officers.

Lower mathematics.

Lower mathematics.—Elementary rules of arithmetic and algebra, including the extraction of square and cube roots, and the use of logarithms. Simple and quadratic equations, proportions, indeterminate equations. Lower analysis; factors, indices, binomial co-efficients, the doctrine of combinations, the binomial theorem; arithmetical, geometrical, and infinite series; maxima and minima values, indeterminate co-efficients; exponential, logarithmic, and trigonometrical series; equations of higher degrees. Plane and algebraical geometry, geometrical analysis. Plane trigonometry. Solid geometry.

Advanced mathematics.

Advanced mathematics (voluntary).—Differential calculus; introduction to analytical geometry; the first elements of the integral calculus.

Tactics.

Applied tactics.—The same course as that described for the artillery students.

Physical science.

Physical science.—General account and classification of the physical sciences. Definition of units of length and weight. Laws of the equilibrium of solids, fluids, and gases. Heat. The applications of steam. Hygrometry. Acoustics. Optics. Electricity, magnetism, galvanism; electro-dynamics, electro-magnetism.

Military history.

Military history.—A very general review of ancient military history; a somewhat more detailed account of that of the middle ages as they approach modern times; modern military history in full. The organization of armies, and the mode of conducting war at each remarkable era, illustrated by the description of some campaigns and great battles.

French.

French (voluntary).—Exercises in translating from German into French.

Surveying.

Theory of surveying.—Extension of the course taught at the War Schools. Different kinds of reconnaissances; reconnaissances for tactical purposes; contrivances adopted in executing a reconnaissance; reconnaissance reports. Scales. Different modes of representing ground; copying and reducing plans. Military surveying; the plane table (*Messtisch*); reflecting instruments; the theodolite; levelling instruments; surveys of estates, of small tracts of ground, and of fortresses.

Topographical drawing.

Topographical drawing.—Practice in drawing ground and hill sketching on Lehmann's system of hachures, and in colouring plans.

Fortification drawing.—Theory of projection as employed in geometrical drawing. The mode of illustrating the details of constructions in earth, timber, and masonry. The exercises in drawing include practice in the method of representing designs for fortifications, with the necessary details, in plan, section, and elevation, both drawn in Indian ink and coloured. The chief object of the course is to enable the young officer to understand, and to prepare with correctness, drawings and plans of objects met with in field and permanent fortification. Fortification drawing.

Architectural drawing.—Perspective. Ornamental designs employed in buildings, drawn in outline and shaded, but without further details. Architectural drawing.

Figure and landscape drawing.—Drawing from models and copies in pencil, chalks, and water-colours. Landscape drawing.

Second Year.

Special engineering science.—The theory of construction and building in its most comprehensive form, and the art of practically applying it in designs for constructions adapted to given conditions of ground. The special application of the rules for conducting sieges in given cases. Course of study for the engineers. Second year. Engineering science.

Hydraulic construction.—Means of employing water-power; hydrometrical operations, charts of rivers, levelling, measurements of depth and rate of currents. Modes of regulating currents; construction of locks and sluices; construction of canals. Irrigation and draining. Foundations under water. Permanent constructions for bridges in wood, stone, and iron. Hydraulic construction

Lower mathematics.—Geometry, spherical trigonometry and descriptive geometry. The system of co-ordinates. Conic sections. Statics, geostatics (equilibrium of masses of earth), hydrostatics. Dynamics and hydraulic science. Lower mathematics.

Advanced mathematics (voluntary).—Continuation of the first year's course in integral calculus, and elements of theoretical mechanics. Advanced mathematics.

Chemistry. (Course of lectures.)—The necessary preliminary knowledge of theoretical principles. Account of the individual elements (the metalloids and their combinations, the acids, and the metals,) illustrated by experiments. In the case of the metals special attention is paid to their applications in the arts, to the processes of extracting and smelting them, and to their alloys. At suitable periods in the course a general review of the composition and alterations of the crust of the earth from a chemical point of view is introduced. Chemistry.

(Manipulations.) Instruction in the principles of qualitative analysis, illustrated by experiments. Independent manipulations by the students under the superintendence of the instructor. Instruction in the principles of quantitative analysis. Analysis by the students of substances connected with the *matériel* of artillery. (Only four or five of the most advanced officers take part in these manipulations).

French. *French.*—Practice in conversation.

Topographical drawing. *Topographical drawing.*—Practice in copying and reducing plans. Drawing of plans of battles with the positions of the troops, and of plans of sieges showing the siege-works and batteries.

Fortification drawing. *Fortification drawing.*—Preparation of drawings in projection, to serve as designs for works constructed with earth and timber, and to show the practical adaptation of such works to the ground. Drawing of fortification plates from copies, in continuation of the fortification drawing begun in the lower Cœtus. The subjects for all these designs and drawings are to be selected with the concurrence of the instructor in special engineering science.

Architectural drawing. *Architectural drawing.*—Architecture in its application to military buildings. Practical exercises in surveying and drawing plans of buildings.

Practical work. The practical work, a considerable part of which is of the same character for the students of both arms, comprises:

(*a.*) Visits to the military establishments in Berlin and Spandau, and examination of the objects, collections, models, &c., contained in them.

(*b.*) Practical operations in the laboratory of the arsenal.

(*c.*) Examination of raw material, ordnance, carriages, ammunition, and other *matériel* of war.

(*d.*) Execution of surveys of artillery carriages, &c., and of military buildings.

(*e.*) Attendance at the practice carried on by the engineers of the Guard in sapping, mining, and other operations of field engineering.

(*f.*) Tracing and profiling field-works, and other practical exercises in fortification.

(*g.*) Execution of projects in connexion with fortification, and the attack and defence of places, including practice in judging distance and in the rules for placing guns with reference to their employment in sieges

(*h.*) Surveying and geodetical operations.

(*i.*) Artillery practice, including judging distance, and the method of employing field artillery in action.

Instruction in fencing is also given to all the students, and the second year's engineer students have to attend riding school; those, however, who are already good riders are excused from this. Drill is not practised at all at the school. Fencing and riding.

The method of instruction is by lecture, but, as usual, the system of small classes is employed. The students of each Cœtus are arranged in various divisions, the number in each of which as a general rule is limited to 25. As, however, the students of the engineers in each Cœtus are kept in a division by themselves, this number is in their case occasionally somewhat exceeded. The artillery students of the lower Cœtus are at present arranged in two, those of the upper Cœtus in five divisions, or parallel classes; the instruction, however, given to all the divisions of the same Cœtus is uniform. The engineer students of each year form only a single division; and when the new system is fully in operation, there will be similarly only one division of artillery students in the upper Cœtus, those, namely, who form the Selecta. Method of instruction. Arrangement in classes.

In every subject the students are furnished with printed text-books giving a general outline of the course of lectures. They are required to enlarge upon these by the notes which they themselves take, and which are occasionally looked over and corrected by the professors.

In all the subjects questions are from time to time set by the lecturers to be answered in writing by the students. At least once a quarter two memoirs of a somewhat more comprehensive character are required in connexion with each course of lectures; one of these memoirs has to be written in the lecture-room, without the assistance of books; the other is written in private, the subject being set by the professor. All these memoirs and exercises, after being looked through and marked by the instructors, are forwarded quarterly to the Board of Studies. Written exercises.

By the kindness of the director of school, some of the lecture-rooms were visited while the lectures were going on. In one, a lecture on permanent fortification was being delivered to the engineer students of the first year, who had recently joined the school. The subject was the various kinds of *réduits* employed in permanent works. The lecture, which was extremely animated and thoroughly professorial, was illustrated by diagrams drawn on the black-board. The students, about 35 in number, were all engaged in taking notes. In one of the large drawing halls the engineer students of the upper Cœtus, about 25 in number, who had already been a The lectures.

year at the school, were found occupied, under the superintendence of an officer, in copying plans of country and fortified places; a large collection of topographical plans, fortification plates, surveys, and field sketches was also seen in this room, all of which were executed with great neatness, and some with a very high degree of finish. By the courtesy of the professor, several specimens were obtained of surveys and field sketches which had been done upon the ground—some with the plane table and *Kippregel*, others with the compass, and others merely by eye without instruments.* Eye sketches appear to be much practised here, as at the War Schools. Finished and accurate surveys, which are made with the *Kippregel*, appear as a rule to be drawn merely with contours without hachures; in field sketches done with the compass or by eye no contours are shown; vertical hachures, drawn according to the fixed scale of shade, are invariably employed. It was stated that the artillery students, even under the old system, had very little drawing of fortification plates, their drawing being confined mainly to subjects connected with artillery. The drawing of machinery, to which great importance is attached at the French school at Metz, is not practised at all here.

Distribution of the time.

Each lecture lasts an hour; the drawing lessons generally occupy two consecutive hours. The lectures during nine months of the year, from October to June, commence daily at 8 and generally continue without intermission until 2. By this hour, on most days of the week, they are concluded for the majority of the officers. Lectures, however, for the engineers in the voluntary subjects of higher mathematics and French occasionally take place in the afternoon. Some of the afternoons also, even during the theoretical course, are occupied in practical work; and occasionally a whole day is given up to a visit to a military establishment. The practical instruction thus to a considerable extent goes on simultaneously with the theoretical course.

The practical course.

The months of July and August are, however, more especially devoted to the practical course, and during this time lectures are altogether suspended. The time employed daily in the practical exercises is about six hours, but in each week one day is left free, to give the students time for writing up notes and finishing drawings in connexion with the work that has been done. In the operations of field engineering—such as bridging, mining, throwing up field works, &c.—no actual

* These specimens have been shown to the Council of Military Education.

work is executed by the students themselves, as is the case at Metz; they merely see the operations performed by sappers; it is not considered necessary in Prussia that an officer should himself perform manual labour; the object is to give the students such a training as to enable them to superintend and direct the operations carried on by the private soldiers. It must, moreover, be remembered that in these subjects all have already had a considerable amount of practical instruction with their regiments, before coming to the school.

Time allotted to the various subjects.

The amount of time assigned weekly to the various subjects of theoretical instruction for the students of both services is as follows:*—

Subjects.	Number of Hours per Week.		
	First Year.		Second Year.
	Artillery.	Engineers.	Engineers exclusively.
Artillery	8	2	0
Fortification and engineering science	3	5	10
Hydraulic construction	0	0	2
Higher mathematics (voluntary)	0	2	4
Lower mathematics	7	8	6
Tactics	3	3	0
Physics	3	4	0
Chemistry	3	0	4
Military history	0	2	0
Veterinary science	2	0	0
French (voluntary)	0	2	2
Theory of surveying	0	1	0
Topographical drawing	3	2	2
Fortification drawing	0	4	4
Architectural drawing	0	2	2
Figure and landscape drawing (voluntary)	0	2	0
Total number of hours per week { obligatory	32	33	30
Total number of hours per week { voluntary	0	6	6

Comparison of the former and present course of lectures for the artillery.

The following table shows the time formerly allotted to the different theoretical subjects in the case of the artillery students, as compared with that given to them under the system recently introduced:—

* A table of the weekly arrangement of lectures is given in the Appendix, page 570. The course for the select class of artillery in the second year not being yet finally determined, it is impossible to show the time allotted to the various subjects in their case.

Subjects.	Number of Hours per Week.		
	Old System.		Present System.
	First Year.	Second Year.	One Year only.
Artillery	6	6	8
Fortification and engineering science	3	0	3
Higher mathematics (voluntary)	2	4	0
Lower mathematics	8	6	7
Applied tactics	2	0	3
Physical science	4	0	3
Chemistry	0	4	3
Military history	0	3	0
Veterinary science	0	2	2
French (voluntary)	2	2	0
Artillery drawing	5	4	0
Topographical drawing	0	0	3
Landscape drawing (voluntary)	2	0	0
Total { Obligatory	28	25	32
Total { Voluntary	6	6	0

The time devoted to the practical subjects of instruction is as follows:*—

	Number of Days employed.		
	Lower Cœtus.		Upper Cœtus.
	Artillery.	Engineers.	Engineers exclusively.
I.—During the nine months of theoretical instruction:			
Visits to—			
The arsenal (in June)	4	4	0
The artillery workshops (in March)	8	8	0
The gun foundry (in May)	2	2	0
The powder manufactory (in May)	2	2	0
The laboratory of the arsenal (in May)	2	2	0
The iron foundry (in May)	2	2	0
A large manufactory of machinery (in May)	2	2	0
Examination of gun carriages, ammunition waggons, &c. (in May)	8	0	0

* This table shows the arrangements as they have hitherto existed; it is believed, however, that little alteration will be made in them under the new system, as almost the whole of the practical work of the artillery students was even formerly done during the first year.

	Number of Days employed.		
	Lower Cœtus.		Upper Cœtus.
	Artillery.	Engineers.	Engineers exclusively.
Drawing of guns, carriages, &c.	12	0	0
Visits to the collection of models of fortresses (May)	3–4	3–4	0
Visit to the fortress of Spandau (May)	2	2	0
Visit to the engineers' practice ground (May)	1	1	0
Attendance at operations in pontooning	1	1	0
Attendance at operations in other kinds of bridging	2	0	0
Execution of practical projects in fortification and the art of sieges at Spandau	3	0	5
Surveys of military buildings	0	0	14
II.–During the months especially devoted to the practical course:			
Operations in surveying and geodesy (July and August)	*	24	0
Practical operations in the laboratory (July)	12–14	0	0
Examination of shot, shell, and other kinds of ammunition (July)	4	0	0
Examination and proof of ordnance	8	0	0
Practical exercises in fortification, throwing up field-works, &c. (August)	6	6	0
Artillery practice, and practice in judging distance (August)	12–14	12–14	0

Fencing and riding.

In addition to the practical exercises detailed in the above table, fencing lessons for the students of both arms take place all the year round at such times as may be ordered by the director of the school. The students of engineers in their second year have also six hours riding-school every week, unless they are sufficiently good riders to be exempted from it.

Course of artillery practice for the artillery officers.

It has been proposed that, in the case of artillery students, the course of artillery practice, instead of being carried on during their residence at the school, should be deferred until after the completion of their instruction there, and that they should be sent for a course of five months to the School of Gunnery immediately after quitting the Artillery and Engineer School. It is not, however, yet decided whether this proposal shall be carried out.

* Under the new system it is intended that the artillery students should also have practice in field sketching; in their case the practice will be confined chiefly to rapid sketches executed either with the compass or by eye, but will not include the more accurate operations of surveying.

One year may perhaps seem rather a short time for the completion of the training of the artillery officers, but a most decided opinion was expressed by the authorities of the school, that the time is quite sufficient to give them all the instruction which is practically useful to them in their profession. It must be remembered also that on joining the school they have already had two years' experience in the practical duties of artillery officers.

Examinations.

Annual examinations.

In each Cœtus there is an examination at the end of the year. Beyond these annual examinations no others are held during the school course. The quarterly memoirs, however, which are set by the professors in each subject, to a certain extent serve the purpose of examinations, though it is expressly stated in the regulations of the school that they are to be chiefly regarded in the light of exercises, designed to afford practice and instruction to the students. These memoirs, as well as all drawings executed during the course, are marked by the professors on the usual system of predicates, and are sent in to the Board of Studies, who are thus enabled to form an opinion of the progress made by each student.

The written exercises partly serve as periodical examinations.

Quarterly reports by the professors.

Every professor is also required to send in at the end of each quarter a general report upon every student under his instruction, detailing, under the usual form of predicates or censures, his abilities (*Fähigkeiten*), diligence (*Fleiss*), and performances (*Leistungen*). The censures are given separately for the theoretical and practical instruction. The director of the school adds a censure regarding the general conduct (*Führung*) of each student. These quarterly censures are announced publicly, yet so much is the system of competition avoided, that no names are mentioned in connexion with them, except in the case of a few of the best students; every one is given a number which is known only to himself, and his censures are announced under this number.

Permission to go in for the examinations depends on these reports.

The censures or marks thus awarded by the instructors for the work done during the course do not affect the actual result of the annual examinations, but the question whether a student shall be permitted to go in for the examination depends on them. The quarterly censures are sent in to the Board of Studies, who at the end of the year deduce from them the general censure (or arithmetical mean of the periodical censures), to which each student is entitled in every subject. In accordance with this general result the Board of Studies decides whether a candidate is qualified for admission to the examination, certain general rules being laid down for their guidance in arriving

at a decision. Students who are found unqualified are generally recommended to the Curatorium for permission to remain a second year at the school in the same Cœtus. If, however, during a second year it is found from the quarterly reports of the instructors that they are making unsatisfactory progress, the Board of Studies can at any time recommend their dismissal; individuals thus dismissed from the school cannot become officers in the scientific corps, but are transferred to the line. Except in the case just mentioned, or in cases of serious misconduct or habitual idleness, the penalty of dismissal from the school during the course of the year is not ordinarily inflicted.

Examinations of the engineer officers at the end of each year at the school.

For the students of engineers the professional examination (*Berufsprüfung*), on which their definite appointment as officers of engineers depends, is divided into two parts, one of which takes place at the close of each year of residence at the school, and is confined to the subjects studied during that year. The first year's examination is probationary, and an officer who fails to pass in it is not admitted to the upper Cœtus, but is generally allowed to remain a second year in the lower Cœtus. The censures or marks obtained in the examination at the end of the first year are carried on to the second year's examination, and the final result depends on the sum of the censures gained in both exam inations. The system has hitherto been the same for the students of artillery also ; but in future, as the majority of them are to remain only one year at the school, they will all be finally examined at the end of the year's course. A certain number—not exceeding 30—of those who do best in this examination will be retained at the school during a second year, for the advanced course in the Selecta; at the end of this they will undergo a further examination, the result of which, however, will not affect their appointment as officers of artillery.

The final examination of a the artillery officers takes places after one year's residence.

Time at which the examinations are held.

The annual examination for the students of both services takes place immediately on the conclusion of the theoretical course at the beginning of July, and before the commencement of the practical course.* The artillery students who remain only one year at the school have therefore still to complete their practical course after the examination, before finally quitting the establishment. The examinations offer an exception to the general rule in Prussia, as they exclude *vivâ voce* questioning, and are entirely conducted on paper. The marks given are assigned exclusively for the answers to the examination questions, without reference to the previous

Mode of conducting them.

* The examination of the engineer students of the lower Cœtus in the subject of surveying is deferred until after the completion of the operations in surveying which form part of their practical course.

performances of the candidates during the school course; in drawing, however, in which there is no examination, proficiency is estimated by the drawings executed during the year.

Before a Board of independent examiners.

The examinations are conducted by a Board, consisting of a president and from five to eight members, who are officers of rank in the artillery and engineers. The Board are appointed by the Inspectors General of the two services, and are entirely independent of the authorities of the school. The president assigns to each member of the Board the duty of examining in one of the subjects. A number of examination questions are each year drawn up by the professors in the different subjects at the school; and out of these the Board of examiners select a certain number to be set, or if they think it desirable, draw up other questions themselves. It is expressly stated that the questions are to have a practical bearing, and to be so clearly and distinctly expressed that no uncertainly may exist as to their purport, at least on the part of those candidates who have such an acquaintance with the subject as careful attention to the course at the school would secure.

Character of the examination.

The questions, as is usually the case in the Prussian examinations, are few in number but of a comprehensive character; they call for considerable reflection in the composition of the answers, and give a candidate scope for the display of ability and reasoning powers. Two, or at the most three questions only are set in each subject, and the time allowed for writing the answer (which is invariably stated with the question) is from one to two hours. The questions set at the last examination, held in July 1868, which were furnished by the kindness of the director of the school, will give a good idea of the character of the examination. It must, however, be borne in mind that the old system, under which the artillery students remained two years at the school, was then in force, and that in their case the arrangement of the subjects of examination will in future years be somewhat different.

Specimen of the questions.

Special Corps Examination Papers for 1868.

A. Upper Cœtus. (Second Year's Students.)

I.—*Artillery.*

(Artillery Officers.)

(1.) What advantages would be gained by the field artillery if the principle of simplicity were to be completely carried out, and why has this not been done? (*Time allowed, one hour.*)

(2.) The employment of field artillery in engagements in defiles. (*One hour and a half.*)

(3.) What advantages does the besieger derive from an indirect breaching fire; what descriptions of artillery are suitable for such a fire, and what are the limits of each with respect to charge and range? (*One hour and a half.*)

II.—*Special Engineering Science.*

(Engineers.)

(1.) What measures should be taken to defend a breach, and what means can an officer of engineers employ to prevent the breach becoming practicable for as long a period as possible? (*Two hours.*)

(2.) What processes must carbonate of lime undergo before it can be used as a cement for masonry, both under ordinary circumstances and below water. (*Two hours.*)

(3.) What metals are used for covering roofs? The different kinds of roofs of zinc or sheet iron to be particularly described. (*Two hours.*)

III.—*Hydraulic Construction.*

(Engineers.)

(1.) What construction of coffer-dams can be employed for enclosing the space required for the foundation of masonry works, supposing the water to be of moderate depth? (*Two hours.*)

(2.) Describe the method of blasting rocks under water. (*One hour and a half.*)

IV.—*Lower Mathematics.*

(Artillery and Engineers.)

(1.) A fly-wheel of 4 feet diameter makes 130 revolutions in 1 minute. What is the velocity of any point in its circumference, and in what time will the point traverse a distance of one mile (=24,000 feet)? (*Half an hour.*)

(2.) A right circular cylinder, the radius of which is r, and the height h, is hollowed out by a right cone of the same radius. What is the height of the cone if the centre of gravity of the hollow cylinder is three-fifths of the height of the cylinder from the common base? (*Three quarters of an hour.*)

(3.) In order to move a weight Q up an inclined plane at a slope of 30 degrees, a power of traction acting parallel to the direction of the inclined plane, of

70 lbs., and a horizontal power of propulsion of 80 lbs., are required,—what is the maximum weight of Q if the co-efficient of friction $\mu = \frac{1}{2}$? (*Three quarters of an hour.*)

V.—*Chemistry.*

(Artillery and Engineers.)

(1.) On chemical equivalents and the law of multiple proportions. (*One hour.*)

(2.) A comparison of the three descriptions of iron produced with coal (cast-iron, wrought iron, and steel), with reference to their most important properties and their practical applications. (*Two hours.*)

VI.—*History of Military Art.*

(Artillery.)

(1.) What is understood by the oblique order of battle; what employment of it is to be found in ancient history; and what induced Frederic the Great likewise to make use of it? (*One hour.*)

(2.) By what means has the mobility and efficiency of modern field artillery been increased? (*One hour.*)

VII.—*Veterinary Science.*

(Artillery.)

(1.) What is spavin? Describe its distinctive symptoms. (*On hour and a half.*)

(2.) Give an account of the conformation of the nostrils of a horse in a sound state; mention the most important diseases to which they are subject, and describe the symptoms by which glanders may be distinguished from other non-malignant diseases of a somewhat similar type. (*One hour.*)

VIII.—*Advanced Mathematics.*

(Voluntary with both Artillery and Engineers.)

(1.) The surface of a paraboloid of revolution between the limits $x = a$ and $x = \frac{p}{2}$ to be computed, if $y^2 = 2\,p\,x$ is the equation of the original parabola. (*One hour.*)

(2.) State some of the most important applications of the law of centrifugal force, and prove the law. (*One hour and a half.*)

(3.) A cannon ball of three kilogrammes weight is forced through a gun 2 metres long by a pressure of 18,000 kilogrammes, caused by the gases produced by the explosion of the powder. What will be the

velocity attained by the ball on its leaving the muzzle of the gun? (*Half an hour.*)

IX.—*French.*

(Voluntary with both Artillery and Engineers.)

(1.) An original essay. "Rapport d'un officier chargé par son supérieur de reconnaître le camp des ennemis." (*One hour.*)

(2.) Extempore translation. Extract from Gourgaud's account of the Battle of La Belle Alliance. (A German translation of the extract was given, which the candidates were required to re-translate into French.)

B.—Lower Cœtus. (First Year's Students.)

I.—*Artillery.*

(Artillery Officers.)

(The use of Practice Tables not permitted.)

(1.) How are the sights of our rifled ordnance arranged? What are their advantages and disadvantages for long or short ranges? (*One hour and a half.*)

(2.) Describe the various methods employed in fixing the lead coating to the projectiles of our rifled guns, and state the advantages and disadvantages of the different methods. (*One hour and a half.*)

(3.) How are elevation and charge determined in the case of indirect breaching fire? (*One hour and a half.*)

II.—*The same Subject.*

(Engineers.)

(1.) What are the duties of the artillery in a regular attack, and through what stages does the fire of the artillery pass from the commencement of the siege to the fall of the fortress? (*One hour and a half.*)

(2.) State the objects of enfilade fire, and describe the arrangements which should consequently be made in regard to the disposition of enfilading batteries. (*One hour and a half.*)

(3.) What are general principles to be observed in arming a detached fort against an attack by open force and a regular attack? (*One hour and a half.*)

III.—*Special Engineering Science.*

(Artillery and Engineers.)

(1.) What are the most important changes in the arrangements hitherto employed in regard to detached

forts, which have been necessitated by the introduction of rifled artillery? (*One hour and a half.*)

(2.) What advantages does a position in rear of the advanced edge of a plateau offer for purposes of defence, as compared with a position in front of the rear edge of a plateau; and what should be the general disposition and arrangement of the entrenchments in the former of these positions? (*An hour and a quarter.*)

(3.) Describe the manner in which the working parties for the first parallel are formed, equipped, and drawn up along the line traced; and the dispositions adopted by the troops employed in covering the work. (*One hour and a half.*)

IV.—*Lower Mathematics.*

(Artillery and Engineers.)

(1.) Arithmetic and Algebra:
Solve the equation $x^2-2x\ y-3x+5y+17=0$ for all positive whole numbers. (*Half an hour.*)

(2.) Geometry:
The angular points of a square are all on the perimeter of an equilateral triangle; find the ratio of the areas of the square and the triangle? (*An hour and three quarters.*)

(3.) Trigonometry:
One angle of a triangle is 70°, the proportion between the sides containing the angle is as 2 : 3; find the other angles of the triangle. (*Half an hour.*)

V.—*Tactics.*

(Artillery and Engineers.)

A southern corps of 20,000 men is advancing on the 15th of July by way of Baruth-Zossen towards the Notte, and a northern division 12,000 strong, which is concentrating from Berlin and Potsdam upon Lichtenrade, is advancing in the same direction.

Problem 1. The northern division, after a forced march, proposes to halt at noon near Glasow, and to continue its march at 4 p.m.

(*a.*) Describe the rendezvous of the main body.

(*b.*) Describe the measures to be taken during the halt by the advanced guard, consisting of 2 battalions, 4 squadrons, 1 field battery, and a detachment (*Zug*) of engineers.

(*c.*) Give a sketch of the dispositions made—the positions of the troops to be shown in colours.

Problem 2. The northern division, having rested at Glasow, starts again at 4 p.m., with the view of reaching before night the passages of the Zülow Graben, near Great Slachnow and Mittenwaldè, and of occupying them.

(*a.*) Describe the manner in which the advanced guard (consisting of 2 battalions, 4 squadrons, 1 field battery, and a detachment of engineers) marches off, and its subsequent procedure.

(*b.*) Describe the march of the main body, consisting of 8 battalions, 4 squadrons, 3 batteries, and half a company of engineers.

(*c.*) Give a sketch of the dispositions made—the troops to be shown in colours. (*One hour and a half.*)

VI.—*Physical Science.*

(Artillery and Engineers.)

(1.) Give a description of a suction pump, a forcing pump, and a fire engine, stating their use and explaining their action. (*One hour.*)

(2.) Describe a photographic apparatus, and state the physical principles of which application is made in it. (*One hour.*)

VII.—*History of Military Art.*

(Engineers.)

(1.) What influence did Gustavus Adolphus exercise upon the military institutions of his time? (*One hour.*)

(2.) What influence have railways and telegraphs had upon military operations? (*One hour.*)

VIII.—*Theory of Surveying.*

(Engineers.)

(1.) A village is to serve as an advanced post of a position. How is a field-sketch of it made, and to what points should special attention be paid in making a reconnaissance of it? (*One hour.*)

(2.) How are the contour lines (*äquidistante Horizontalen*) laid down, firstly, in surveys made for purposes of fortification (*bei Festungs-aufnehmen*), and secondly, in those executed by the General Staff (*bei denen des Generalstabes*)? Which is the most accurate process of surveying them, and which the most rapid? (*An hour.*)

Details regarding the examination.

The examination lasts about a week for the students of each Cœtus. It takes place in the presence of one of the members of the board of examiners and some of the officers of the school, whose duty it is to prevent copying. The questions are successively dictated by the examiner, a second question not being set until the time allotted to the first has expired and the papers of all the candidates have been collected.

Mode of awarding marks for the answers to the examination questions,

The papers in each subject are, in the first instance, looked over and marked by the professor of the course at the school. They are then forwarded to the board of examiners, and are carefully looked through by the member of the board who acts as examiner in the particular subject. He subjects the marks awarded by the professor to a careful scrutiny, and, if necessary, alters them, his decision being final. The marks to be assigned for the drawings executed during the school course are decided at a general meeting of the board.

and of determining the final result.

The final result of the examinations is also determined at a similar meeting; and a report showing the marks or censures gained by the individual candidates, and stating those who have come up to the required standard, is forwarded to the Curators of the school.

Conditions required in order to pass the examination.

The qualifications required both from the students of the artillery at the end of their single year's course, and from those of the engineers, either in order to pass from the lower into the upper Cœtus, or to be entitled to a certificate on quitting the school, are all in principle the same. Every candidate must obtain at least the predicate "satisfactory" (*befriedigend*), the numerical value of which is five—

1. In each of the special studies of his own arm, viz.: artillery and tactics in the case of the artillery students; and fortification, hydraulic construction, and tactics in that of the engineer students.
2. In obligatory mathematics.
3. As the general average of the aggregate of the censures in all the subjects of examination.

No superiority in other subjects is allowed to compensate or inferiority in the special studies of the respective arms; the minimum standard must be reached in each of them separately. Indeed, even in the subsidiary studies, in which there is no fixed minimum, the examining board are empowered to recommend that a candidate who does not obtain more than the censure "insufficient" (*nicht hinreichend*) in those which are most professionally useful, should not be allowed to pass—the object being to prevent the entire neglect of individual subjects.

Examination in voluntary subjects.

The ordinary examination includes only the obligatory subjects of instruction; at the end of the second year, however, the students are allowed to offer themselves for examination in the voluntary subjects taught at the school, viz., higher mathematics, French, and landscape drawing. The censures obtained in these subjects, provided they exceed the predicate "satisfactory," are added to those gained in the obligatory subjects; otherwise they do not affect the result of the examination.

Definitive appointments to the respective services.

The artillery students in the lower Cœtus who pass the examination, after completing the practical course, receive definitive appointments on the strength of the corps, and the majority of them at once return to their regiments. The 30 best, according to the report of the examining board, are retained for a second year's instruction at the school. The engineer students of the first year are, on passing their examination, qualified for admission to the upper Cœtus; they go through their practical course in July and August, and after a month's vacation return to the school on the 1st of October. Those of the second year who successfully pass the final examination return to their regiments in July with definitive appointments as second lieutenants of engineers.

Competition scarcely recognized at the school.

Except in regard to the admission of the artillery students to a second year's course at the school, the system of competition is not carried out in the examinations. Each student on leaving the school receives a certificate, stating the mode in which he has passed his examination in the various subjects; but no list of the candidates arranged in order of merit is published; and the result of the examination does not under ordinary circumstances give any claim to priority of appointment. The seniority of the officers in their respective corps is determined by the date of their original nomination to the rank of officer, and it is only in cases in which these original appointments bear the same date, that the standing of the officers is affected by the results of the examination at the school. With such small advantages held out to those who distinguish themselves in the examinations, it is natural that there should be scarcely any competition among the students, notwithstanding which the great majority of them are said to work steadily. The quarterly reports furnished by the professors, and the power possessed by the Board of Studies of refusing a student permission to go in for the annual examination, or in extreme cases of recommending his dismissal from the school, are found a sufficient check upon idleness.

Course pursued with those who fail to pass the examinations.

Failure in the examinations is followed with different consequences according to the extent of the failure. The course to be adopted in each case is recommended by the

examining Board and the Board of Studies; the decision rests with the Curators of the school. On the occasion of a first failure a second trial is generally allowed; a candidate is in some cases permitted to go through a second course of instruction in the same Cœtus at the school, in other cases he is sent back to his regiment, and allowed to come up for examination again at the end of the ensuing year. More than two trials, however, are never given. A candidate who has twice failed is ineligible for appointment as an officer of the scientific corps; he returns to his regiment as a supernumerary, and serves with it on the pay of an infantry officer, until he can effect a transfer to a regiment of the line. The number of failures in the examinations is said to vary considerably, though in general they are not very numerous. In 1867 they appear to have been more numerous than usual, which is ascribed to the interruption in the studies caused by the war in 1866, and the limited time for preparation which most of the candidates had had.

Reports upon the examinations, &c. forwarded to the Inspector General of Education.

A report upon the final examination of the students of both arms is forwarded to the Inspector General of Military Education; the same officer also receives once a year, at the end of the theoretical course, a detailed report, drawn up by the professors in the various subjects, of the system of instruction pursued, and the progress made by the students during the year. This report is accompanied by specimens of the memoirs and drawings of the students. The central educational department is thus kept acquainted both with the system and the results of the instruction given at the school, although it does not appear to exercise any direct control over the institution.

Concluding Remarks.

Employment after leaving the school.

After quitting the school, the officers of engineers in general do duty for a certain time with a battalion of engineers, and are then for a further period employed in some fortress to superintend works and take charge of buildings, before being promoted to the rank of first lieutenant. Artillery officers, after serving with their regiments for a time, are in some cases employed at a later period in the manufacturing departments. This employment, however, does not necessarily form part of their duties, but is entirely left to the option of the officers themselves.

Examinations for promotion in the artillery and engineers.

The artillery and engineers are the only branches of the Prussian service in which there are examinations for promotion. In both corps first lieutenants are required to pass an examination before promotion to the rank of captain; and in the engineers a further examination must be passed

by captains of the second class, before they can become captains of the first class. These examinations are conducted by two permanent boards, each consisting of about six officers of the respective services, and presided over by a general officer. The examination includes both practical drill and theoretical subjects, and lasts nearly a fortnight. The obligation of passing these examinations for promotion is considered by the officers of the scientific corps to be a grievance, and to create an invidious distinction between them and the officers of the other branches of the service. It appears also that the numerous examinations in the artillery and engineers have a tendency to make these services less popular than the cavalry and infantry with young men entering the army. The rate of pay, however, which is the same for officers both of artillery and engineers, is somewhat higher than in the infantry. Subalterns receive about 60 thalers (9*l.*), and captains and majors about 100 thalers (15*l.*) a year more than officers of a similar rank in the latter service. Officers of engineers, moreover, frequently obtain lucrative appointments of a civil nature.

Obligation of service formerly exacted from officers of the scientific corps.

It was formerly the custom that all officers of the artillery and engineers, in consideration of their instruction at the school, were bound to serve for a period of six years before retiring from the service. The regulation still exists, but it is said to be no longer enforced.

Late period at which the special instruction of the artillery and engineers is given.

The chief peculiarity of the system of instruction pursued with regard to the officers of the scientific corps in Prussia, is the late period to which their special studies are deferred. The Prussian system in this respect appears to differ from that followed in any other country. No special education is given to them before entering the army; they join at the same age and under the same conditions as candidates for commissions in the other branches of the service; they are first required to qualify as officers of the line by the ordinary course of military instruction at a War School, and a thorough acquaintance with practical duty, acquired by some years of service with their regiments, is enforced before their special instruction as officers of the scientific corps commences. This system is considered by Prussian officers superior to that by which, as in England and France, the theoretical instruction is given before any regimental duty has been performed. It is maintained that theory can be more easily understood if it is based upon a groundwork of actual experience, and that officers of the age of 23 or 24, who have already acquired a practical knowledge of their duties, derive more advantage from scientific study than young men of 17 or 18, who have no practical

Advantages claimed for the Prussian system.

acquaintance with the subjects to which their studies relate. Another argument urged in favour of the Prussian system is, that in case of war it affords a large supply of officers who, though their scientific instruction is not completed, are still thoroughly fitted for the performance of ordinary regimental duties. The school can be temporarily closed, and the students sent to do duty as battery or battalion officers in the artillery and engineers. The maintenance of a single school for the two services appears to rest exclusively on economical grounds; although for the future the instruction for the students of the respective arms will be entirely distinct, the subjects taught to both are so similar that in many cases the same instructors are available.

THE WAR ACADEMY OR SENIOR DEPARTMENT (*KRIEGS-AKADEMIE*) AND THE PRUSSIAN STAFF.

Introductory Remarks.

The War Academy formerly called the War School.

The War Academy is the institution described in the Report of the Commissioners of 1856 under the title of the War School (*Kriegs-Schule*). Its name was changed to that which it now bears in 1859, in order to distinguish it from the War Schools, or schools in which candidates for commissions receive their professional education—the name given to the old Division Schools (*Divisions-Schulen*) on their reorganization in that year.

Not strictly a staff school.

The War Academy can scarcely with strictness be called a staff school, for though the ordinary means of obtaining a staff appointment is by passing through it, such a course of instruction neither gives any claim to, nor is a necessary condition of, staff employment, and the education given at it is not exclusively intended to form staff officers.

It differs both from the French Staff School and the English Staff College.

It differs entirely from the French *Ecole d'Etat Major*, which educates young men of 21 or 22 for the staff and the staff alone. "Its pupils are men of twenty-five "or twenty-six, officers of three years' standing, or five "years' service since their first entering the army." It has more resemblance to the Staff College in England, but it differs from the latter considerably both in its objects and in its system of instruction; it is not, even with officers of the lower ranks of the army, a necessary channel of admission to the staff; and those who have passed through it have no claim to special employment of any kind. In the latter

respect it is more like the old senior department at Sandhurst, but the education is of a much wider and more general character than that which was given at that establishment, and is not confined merely to military subjects. The War Academy in fact has more the character of a "military university," as it is called in the regulations of the establishment, and as a consideration of the subjects taught at it will show. Its course of instruction is intended to carry to a higher point both the professional knowledge which has already been obtained at the War Schools, and the general education which every officer is supposed to possess before entering the service. "The *general* object of the institution," as stated by Lieutenant-General von Etzel, the present director of the academy, "is to raise the scientific spirit of "the army; its *special* object is to give such an education "to the most talented officers of all arms, after they have "proved themselves possessed of the practical qualifications "of good regimental officers, as will fit them not only for "appointments on the staff but for all responsible positions "of high rank, for the command of regiments, for employment "as instructors at the military schools, and for all duties "which require scientific attainments, both in military and "in general subjects, of a higher degree than those ordinarily "possessed." Its objects.

The formation of staff officers is therefore only one of the many objects of the education given at the academy. At the same time, since admission to the staff is the prize most highly coveted by the successful students, it is desirable before proceeding to a description of the academy itself to give a brief account of the nature of the staff appointments in the Prussian service.

The Prussian Staff.*

The Prussian staff (*Generalstab*) occupies a position which does not exactly correspond to that either of the *corps d'état major* in France, or of staff officers in England. It constitutes to some extent a distinct corps by itself, to which, however, admission is not obtained until after some service as a regimental officer; officers admitted to it cease to belong to particular regiments, but at the same time they do not as a matter of course continue permanently in it during the whole of their future service; they are liable to be sent back to do regimental duty, though The staff only partially a distinct corps.

* A more complete account of the organization of the Prussian Staff will be found at page 339, in a memorandum furnished by Colonel Walker, Military Attaché at Berlin.

not necessarily in their original regiments, after having been employed for some time on the staff, and the great majority in the higher ranks revert to their original positions of regimental officers.

Establishment of the staff.

The whole staff is under the direction of a single general officer, at the present time General von Moltke, who has the title of chief of the general staff (*Chef des Generalstabs*). It consists in time of peace of about 115 officers, none of whom are in general above the rank of colonel or below that of captain, all officers being promoted to the latter rank on definite appointment to the Staff Corps. In addition to the fixed establishment there are always a number of regimental officers temporarily attached to the staff as assistants; in fact most officers are usually employed for a time in this manner before receiving definite appointments.

Its divisions.

The Staff Corps is divided into the Head-quarters Staff, or *Grosser Generalstab*, the members of which are employed on office duties in Berlin, and the staff attached to the various army corps and divisions (*Generalstab der Armee-Corps und der Divisionen*).

The Head-quarters Staff.

The duties of the *Grosser Generalstab* consist in compiling statistics regarding foreign armies, and collecting every kind of information which may be useful in the event of military operations in any country of Europe. The officers employed upon it are distributed into three divisions, to each of which one particular portion of Europe is assigned. In connexion with the *Grosser Generalstab* there is an important department, called the *Neben-Etat des grossen Generalstabs*, the duties of which, performed for the most part by officers temporarily attached to the staff, nearly correspond to those of the Topographical Department in England. This department consists of four sections, viz:—

The Topographical Department.

1. The historical section (*kriegsgeschichtliche Abtheilung*), which has charge of records and archives connected with military history.
2. The survey section (*Büreau der Landes-Triangulation*), employed on the geodetical operations and calculations which form the basis of the trigonometrical survey of Prussia.
3. The topographical section (*topographische Abtheilung*), whose duty it is to fill in the details of the survey, after the main points have been fixed and the calculation of the triangles made by the preceding section.
4. The geographical and statistical section (*geographisch-statistische Abtheilung*), charged with the compilation of statistics.

Staff of army corps and divisions.

The appointments on the staff of the army corps and divisions, which correspond to those in the adjutant-general's and quartermaster-general's departments in our service, are held partly by officers of the general staff, partly by *adjutants*. The latter do not belong to the Staff Corps or *Generalstab*, but are regimental officers temporarily detached from their regiments, and occupying much the same position as the staff officers of our own service. Like them they continue on the strength of their regiments, and their promotion goes on in the usual course. These officers must be distinguished from the adjutants of battalions, who, as with us, are selected by the commanding officers. The adjutants employed as assistants on the staff are, like all other staff officers, appointed by the King. There is in Prussia no such thing as a personal staff, except in the case of the sovereign, princes of the royal family, and field marshals. The name of *aide-de-camp* does not even exist in the Prussian service; the nearest approach to it is that of adjutant, which is the title given to the officers attached to the few high personages entitled to a personal staff. But the appointment of adjutant is not, in general, of a personal character; he is not selected by, and does not move with, the general on whose staff he serves, and though in some respects he performs the duties of an aide-de-camp, the position he occupies more nearly resembles that of a brigade-major in our service.

No personal staff in the Prussian service.

The adjutants.

Number of staff officers employed in districts.

The number of staff officers employed in the various commands in the Prussian service is as follows:—

I. For an army corps:
   1 field officer as chief of the staff.*
   2 staff officers.
   2 adjutants (captains or lieutenants).
II. For a division:
   1 staff officer.
   1 adjutant (a captain or lieutenant).
III. For a brigade:
   1 adjutant (a lieutenant).

Course of annual instruction for all staff officers.

All the officers of the staff in each army corps go through an annual course of instruction in practical staff duties. They are sent for a fortnight each summer on a mounted expedition (*Generalstabsreise*), under charge of the chief of the staff of the army corps, to some part of the country, where they conduct the operations of an imaginary campaign, and practically perform the duties which would devolve upon staff officers on active service. Each day, as they advance,

* The chiefs of the staff in two of the army corps are at present major-generals.

they write the necessary orders for the distribution of the troops supposed to be at their disposal, detail the arrangements required for quarters, transport, provisions, forage, &c. execute reconnaissances of roads, and make sketches and reports of military positions. The officers of the Headquarters Staff at Berlin are taken each year for a similar course of staff duty under charge of General von Moltke himself, and frequently go to a considerable distance from the capital: the expedition last summer was made to the valley of the Moselle. These "staff expeditions" are by all military men in Prussia considered a most useful institution, as affording staff officers a practical insight into many of the duties which they would have to perform on real service.

Other appointments held by officers of the staff.

Officers of the staff, besides being employed at headquarters or with army corps and divisions, are frequently employed at the War Office, on diplomatic and special missions to foreign countries, and in educational appointments.

Admission to the staff.

Appointment to the staff is not dependent either upon passing an examination or upon any other special conditions. A certificate obtained at the War Academy neither leads as a matter of course to admission to the Staff Corps, as in France, nor is supposed to be a necessary qualification for staff employment, as in our army. Any regimental officer may be selected for the service, but, as a matter of fact, staff officers are usually, and adjutants very frequently, taken from men who have passed through the War Academy. In practice also the usual, though not the necessary, course is that an officer should be temporarily attached to the topographical bureau before being definitely appointed to the staff; but direct appointments to the permanent establishment may also be made. It is believed that officers are selected in the main on the grounds of real merit, certainly for the staff, and with rare exceptions for the *Adjutantur* also.

The War Academy.*

Organization of the academy.

The War Academy is under the general control of the Inspector-General of Military Education, without whose sanction no alterations can be made in the course of study or other regulations of the establishment. The immediate management is in the hands of a director, who is assisted in duties relating to ordinary routine and discipline by an adjutant and either one or two staff officers; these four officers constitute the "Direction" or military staff of the school. The professors

The director and military staff.

The professors.

* A detailed account of the organization of the War Academy will be found in a memorandum (Appendix, page 572,) communicated by the Director, Lieut.-General von Etzel, by whose kindness much valuable information regarding the institution was furnished.

are partly military men and partly civilians; all the professors of the non-military subjects (*formale Disziplinen*) are civilians, and many of them are men of high scholastic celebrity. The superintendence of the instruction is, as usual, entrusted to a Board of Studies, of which the director is president; the other members consist of three military officers of rank—one of whom must belong to the artillery or engineers—and two civilians, selected from among men of literary reputation, who have a practical acquaintance with the subject of education. The Board of Studies, in addition to making recommendations to the Inspector-General of Education regarding the course and system of instruction at the academy, exercise a supervision over the professors and over the progress of the students. They also select the professors to be employed, and recommend them for appointment to the Inspector-General. Another very important part of their duties is that of conducting the examinations both of the candidates for admission to the academy and of the officers under instruction at it.

The Board of Studies.

The establishment in detail is as follows:

Establishment.

I. *General Staff.*

One director, a lieutenant-general.
One adjutant.
One or two field officers, members of the direction.

II. *Professorial Staff.*

Twelve military professors, viz.:—

Two	professors	of military history.
Two	„	fortification.
Two	„	geodesy and surveying.
One	„	tactics.
One	„	the science of arms.
One	„	military geography.
One	„	staff duty.
One	„	military administration.
One	„	military hygiene.

Fourteen civilian professors, viz.:—

Three	professors	of mathematics.
Three	„	history and literature.
Two	„	French.
One	„	Russian.
One	„	geodesy.
One	„	the history of philosophy.
One	„	general geography.
One	„	chemistry.
One	„	physical geography and physics.

There are also a paymaster, a secretary to the Board of Studies, and a librarian.

Appointment of the professors.

The military professors are, as a rule, officers belonging to the General Staff of the army; but military administration is taught by an officer of the *Intendantur* or "control department," and military hygiene by a staff surgeon. At present the time for which an officer may hold an appointment as professor is quite indefinite, but, in order to avoid the frequent changes which at present occur, the organization of a special corps of military instructors for the academy is in contemplation. Officers will remain from four to six years in this corps, and will then return to their usual military duty. The civilian professors are chiefly selected from among professors of the university. The remuneration of all the professors depends on the number of lectures delivered in the week; the ordinary rate is 100 thalers (15*l.*) a year for each weekly lecture. This sum is considerably larger than that given at the Artillery and Engineer School, and is considered quite sufficient to secure a high class of instructors.

Annual expenditure.

The annual expenditure on the War Academy is about 26,000 thalers (3,900*l.*); this sum, however, includes only the salaries of the staff and professors, and the general expenses of the establishment. The officer students, in addition, draw their regimental pay and receive lodging allowance, none of them being lodged in the buildings; quarters are provided only for the director and the other officers of the Direction.

The buildings.

The Academy is situated in Berlin, in the *Burgstrasse*, facing the Royal palace. There is nothing remarkable in the buildings, the accommodation afforded by which is on a somewhat limited scale, and in the Budget for 1869 a sum is proposed for the extension of the establishment. There is, however, a good library, a large collection of maps and plans, a museum of models of artillery and fortification, a chemical laboratory, and a cabinet of physical science well supplied with scientific apparatus.

Duration of the course. Number of students.

The course at the academy lasts for three years. The number of students is at present 163, one-third of whom, or about 55 in number, are admitted annually. This number is stated not to be proportionate to the present strength of the army, but the accommodation is insufficient to admit of a larger number of students.

Admission by competitive examination.

Admission to the academy is obtained by a competitive examination, which is open to officers of all branches of the service who have actually served three years as officers. Most of the candidates on

admission are of at least four years' standing as officers, and have therefore on an average been in the service six years. There is no limit either in regard to the age or the rank of the candidates; the majority of the students at the present time are first lieutenants but there are also a considerable number of captains among them. Every officer of the required standing has a right to send in his name as a candidate for the examination (*sich anzumelden*), provided he obtains the necessary certificates; there is no regulation limiting the number from any one corps or regiment; a commanding officer has, however, the power, on the ground of the want of officers in his regiment, to postpone or entirely refuse an officer's application, but in this case the latter has the right of appeal to higher authorities. Obstacles do not often appear to be thrown in the way of officers going in for the examination. Care is taken as far as possible to prevent any candidate standing who has not earned for himself the character of a good regimental officer. The certificates required as a condition of admission to the examination are as follows:—

Certificates required as a condition of admission.

(1.) That the candidate is thoroughly acquainted with regimental duty, and has on all occasions shown himself a thoroughly practical officer.
(2.) That he has a disposition for, and abilities to profit by, a high scientific education.
(3.) That his health is such as to afford a prospect of his being able to continue in the service for a reasonable period.
(4.) That he possesses strength of character and firmness.
(5.) That he is not in pecuniary difficulties.

These certificates must be obtained from the candidate's commanding officer; they are said to be given with great strictness and perfect impartiality.

Regulations for the admission examination.

The examination of the candidates takes place at the head quarters of the army corps to which their respective regiments belong. The papers, however, are set by the Board of Studies of the War Academy, and are sent from Berlin. The questions and the time allotted to each are the same for all the candidates. The subjects of examination are a sort of combination of those required in the *Portepée-fähnrich* and officer's examinations respectively, being partly of a general and partly of a professional character. A programme of the subjects, the general character of which remains unaltered from year to year, is published in the winter for the information of candidates, the examination

Subjects of examination.

itself taking place in April. The programme for last year was as follows:—

1. Mathematics:
   (*a.*) One question in arithmetic or algebra.
   (*b.*) One question in geometry.
2. History and geography:
   (*a.*) One question in ancient history.
   (*b.*) One question in the geography of Europe.
3. Military sciences:
   (*a.*) A problem in field fortification.
   (*b.*) A problem in permanent fortification.
   (*c.*) One question in the science of arms (*Waffenlehre*).
   (*d.*) A problem in tactics.
4. French:
   An original essay on a given subject.

The amount of actual knowledge required in the various subjects is much the same as in the previous examinations passed before obtaining a commission, but the questions are set in such a form as to demand more reflection in answering them. Each candidate is required to send in his *Curriculum Vitæ* written both in German and French, containing a brief outline of the places at which he has been educated, and the course of studies he has followed, as well as a military plan, which he must certify to have been executed by himself without assistance, in order to test his proficiency in drawing.

Voluntary compositions received.

In addition to passing the examination in the above obligatory subjects, candidates are also allowed to send in essays written previously to the examination on various non-military subjects. The subjects for these voluntary compositions are set by the Board of Studies of the War Academy and published some time previously, each candidate being allowed to select such as he pleases. These compositions are to a certain extent considered in determining the relative merits of the candidates.

Character of the examination.

The examination is intended not only to ascertain whether the candidates have kept up the general and professional knowledge of which proof has been required in their previous examinations, but also, and more especially, to show whether they have such general ability and intellectual power as will enable them to profit by the course of instruction at the academy. With the latter object it is specially directed that the questions should not be such as to require merely an exercise of memory in answering them, but that they should be of a character to afford a candidate

opportunity for displaying his mental capacity and power of thought. Great importance is also attached to correctness of style, clearness of expression, and logical arrangement of ideas.*

Mode of conducting the examination.

The examination occupies about five days, and consists entirely of paper work. It takes place in the presence of a Board appointed by the General Officer commanding the army corps, and presided over by the chief of the staff. A fixed time is allowed for each question; the time occupied by a candidate on his answer is in all cases noted by the Board, and value is attached to the rapidity with which a question is worked. The Board give a preliminary report upon the candidates' answers, which, however, is of quite a general character, and appears to amount to little more than a certificate that no improper assistance has been employed.

Result of the examination decided by the Board of Studies.

The real decision of the result of the examination rests with the Board of Studies of the War Academy, to whom the papers are forwarded from the various provincial towns in which examinations have been held. The members of the board look through the papers, and decide upon the candidates who are qualified for admission. In marking the answers the usual system of predicates is adopted.

Standard of qualification exacted.

In order to be entitled to admission, a candidate must as a minimum obtain the predicate "satisfactory" (*befriedigend*) in each of the military subjects with the exception of drawing, inferiority in which may be compensated for by superiority in one of the other subjects. In each of the non-military subjects the same minimum is in general required, but a failure in one of them is not a fatal obstacle, if a candidate obtains the higher predicate of "good" (*gut*) in one of the voluntarily selected essays. Even a candidate who fails to come up to the required minimum standard in individual subjects owing to a deficiency in positive knowledge, but who gives proof of great ability in his general answers, may exceptionally be recommended for admission to the academy. The final decision upon such cases rests with the Inspector-General of Military Education.

Modifications of the principle of competition adopted in the examination.

Even though the examination is competitive, in cases of near equality among the candidates a preference is given:—

1. To those who have distinguished themselves in the field on active service.
2. To those who, from their personal qualifications, are most likely to be useful members of the academy.

* The questions set at the entrance examination held in April 1868 will be found in the Appendix, page 577.

3. To those who, from their more advanced age or higher rank, would be placed at a disadvantage by their admission being postponed to a future examination.

Thus even here, in one of the few cases in which competition exists in Prussia, the principle is not carried out to its full extent, and other considerations besides that of strict regard to the merit shown in the examination are allowed to tell in deciding between the candidates.

Number of candidates.

The average number of candidates in recent years has been 100, of whom little more than half can obtain admission to the academy. At the last examination (April 1868) there were 105 competitors, of whom 58 were admitted. It is anticipated that the number of competitors will be greater in future years, as recently, owing to the war of 1866, the studies of officers preparing for the examination have been interrupted. About one-third of the officers who enter the academy have joined the army from the Cadet Corps; and here, as at the other schools, it is noticed that the *Abiturienten* of the public schools in general show a marked intellectual superiority to those who have been educated at the Cadet Houses. Of the 163 officers at present at the academy, 12 belong to the artillery and three to the engineers. Every officer admitted to the academy is bound to serve two years for each year that he is at it; on quitting it, therefore, he cannot leave the service for six years.

Distribution of the yearly course of instruction.

The students are divided into three classes or *Cœtus*, one for each year. The course of lectures at the academy commences each year on the 1st of October and continues until the 1st of July, a fortnight's vacation being allowed at Christmas and Easter, and a few days at Whitsuntide. With the second and third year's students the month of July is occupied with practical out-door work; during August and September they are sent back to do duty with their regiments; and the students of the first year return to regimental duty for the whole of the three months. In the intervals between the annual courses the officers were formerly sent to do duty with the arms to which they did not belong. The opportunity of being attached to the other services is, however, now confined to a very limited number of the best students, and is deferred until the termination of their three years' residence at the academy.

Subjects of instruction.

The course of instruction is of a very wide character, including even many subjects which have no connexion with military education, such as mental philosophy, literature, ancient and modern history, &c. The subjects are divided

into two classes, the military and the non-military. Under the former head are included—

Military subjects.

Tactics.
Military history.
Science of arms (*Waffenlehre*).
Field and permanent fortification.
The art of sieges (*Festungskrieg*).
Surveying.
Staff duty (*Generalstabs-Geschäfte*).
Military geography.
Military administration.
Military hygiene (*Militair-Gesundheits-pflege*).

The non-military subjects include—

Non-military subjects.

Mathematics.
Higher geodesy.
General history.
History of literature.
History of philosophy.
Universal geography.
Physical geography.
Chemistry.
Physical science.
French.
Russian.

Obligatory and voluntary subjects.

The strictly military subjects are obligatory for all the students; the non-military subjects are voluntary, with the exception of lower mathematics, which are obligatory with the students of the first year. Out of the non-military subjects, however, every officer is required to make a selection of a certain number in some particular branch—for instance, among those bearing upon mathematics, on history, or on languages—which then become obligatory in his case. The object of affording this choice of subjects is to encourage everyone to cultivate any special talent he may possess. Twenty lectures at least in a week must be attended by each student, and most attend about 22. The number of weekly lectures in the obligatory subjects is in general about 12. The subjects are not all studied simultaneously, different ones entering into each year's course; in none but military history, mathematics, and modern languages are lectures given continuously throughout the three years.

Course of instruction in the various subjects.

The nature of the instruction to be given in each of the subjects is very fully detailed in regulations issued by the Inspector General of Military Education. The course on

Tactics.

tactics is divided into two parts, formal and applied tactics; the first, consisting chiefly of the history and literature of the subject, is studied during the first year; the second portion, which is taught in the second year, enters into the practical application of tactical principles in war, and the employment of the various arms, illustrated by historical examples.

Military history.

Military history, the study of which is enforced as "the "most efficacious means of learning the art of war in time "of peace," is divided into three courses, taught consecutively during the three years. The first year's course embraces the period from the introduction of fire-arms to the middle of the 18th century; the second period extends from the middle of the 18th century to the French Revolution, with special reference to the campaigns of Frederic the Great; the third goes down to the present time. The peculiarities of the strategy of each important era are dwelt upon; the instructors are particularly directed to avoid making their lectures merely a "dry chronological account "of military events, or an enumeration of the changes which "have taken place in tactics and strategy, but to give a life-"like description of the circumstances under which war was "waged at different eras, and to produce a finished picture "of the character of great military leaders and the troops "which they commanded."

Science of arms.

The science of arms (*Waffenlehre*) is an extension of the subject as taught at the War Schools, and includes an account of the various kinds of small arms, artillery, ammunition, and material of war; in regard to artillery, the course is more devoted to its practical employment on service, and to the effect of the different kinds of fire under various conditions, than to the construction of ordnance or the theory of the subject.

Fortification.

Field fortification is studied in the first, permanent fortification in the second year. In both it is directed that the instruction should neither, on the one hand, be of a simply elementary character, as at the War Schools, nor, on the other hand, should enter into technicalities required merely in the engineer service. In field fortification the subjects to which special attention is directed, are the employment of entrenchments in action, the defence of positions, villages, passages of rivers, &c., by works rapidly thrown up, bridging, and the means of repairing or destroying communications such as roads, railways, and bridges. In permanent fortification the modifications introduced by the introduction of rifled artillery, and the tactical and strategical employment of fortresses are specially dwelt upon.

The art of sieges (*Festungskrieg*), which corresponds to the "*attaque et défense des places*" of the French schools, is not commenced until the third year, the course being founded upon the knowledge of field and permanent fortification acquired during the two previous years. In this subject, again, it is directed that all merely technical details should be avoided, the object being not to form engineers, but to convey such instruction as would be useful to any officer. The subject of coast defences is one to which special attention is paid in this course. Art of sieges.

In surveying, the instruction is of a considerably more advanced character than that given at the War Schools, its express object being to prepare officers for employment on the trigonometrical survey. The subject is, however, only studied during the second year, and the time devoted to it is occupied entirely with lectures on the theory of surveying, no drawings even being executed by the officers during the regular course. Practice in actual surveying on the ground is only afforded during the month of July. Surveying.

The lectures on staff duty (*Generalstabs-Geschäfte*) commence with a general account of the organization of the staff, both in Prussia and in foreign services, and then proceed to give detailed instructions as to the duties which a Prussian staff officer in any position is called upon to perform, both in peace and on active service. The theoretical course is supplemented by a month's actual practice in staff duties, to which further allusion will be made. Staff duty.

Military geography is studied in the second year, as a preparation for the course of modern military history which follows in the succeeding year. The subject as taught at the academy is somewhat a wide one; it is not merely confined to a description of the physical features of different countries, but embraces also "statistics as to their population, commerce, and products, the social and political circumstances of the inhabitants, their education, their industrial occupations, their military and civil institutions—in fine, everything that may be of importance for military operations as affecting the general defensive power of a country." Towards the close of the course, the subject is treated in a more strictly technical manner; the influence of the physical features of a country upon military operations is illustrated by a special consideration of various countries which have been the scenes of important campaigns. Military geography.

Military administration includes instruction in all regulations connected with military finance, supplies of provisions, forage, clothing, and stores of all kinds, the barrack and hospital service, the organization of the army, and the steps Military administration.

requisite for putting the forces of the country on a war footing. Military law, however, is not included under it; it is said that there are in Prussia so many good works on the subject that it is thought unnecessary to give any instruction in it at the academy.

Military hygiene.

Military hygiene (*Militair-Gesundheits-pflege*) is a subject which has only recently been introduced, and the extent to which the instruction will be carried is not stated in the regulations of the academy.

Mathematics.

Many of the non-military subjects are so devoid of any connexion with the practical duties of an officer, that it is scarcely necessary to say much regarding the instruction in them. The principle, however, observed in regard to the teaching of mathematics is worthy of notice; while a certain amount of mathematical knowledge is regarded as necessary for all officers employed upon the staff, in order to understand surveying, it is also considered desirable to have in the service some officers of the high mathematical attainments which can only be looked for in the few who have a natural talent for the subject. In accordance with this principle, an elementary course of mathematics is obligatory upon all the students during their first year at the academy, while the higher course taught in the two following years is voluntary, and no one is encouraged to enter upon it unless he gives proof of natural taste and ability, "without which qualifications," it is stated, "the study of advanced mathematics must be entirely devoid of profit." The obligatory course includes a general recapitulation of the subjects required in the *Portepée-fähnrich* examination, viz.:—Arithmetic, the lower portions of algebra, geometry, and mensuration, plane trigonometry and the use of logarithms. To these are added some of the more advanced portions of algebra (such as equations of the higher degrees, the theory of powers and indices, and series), solid geometry, and spherical trigonometry. As a special preparation for the higher course taught in the following years, and to test the natural abilities of the students, conic sections are taught at the end of the year. The voluntary mathematical course during the second year comprises the differential and integral calculus, with their applications to curves, areas, and volumes, concluding with the elements of the calculus of variations, and equations of the lines which are the shortest that fulfil specified conditions. The third year's course consists of statics and dynamics, with special reference to their applications to the science of artillery, the theory of projectiles, the measurement of initial and final velocity, the effects of shot upon iron plates, &c.

The obligatory course taught only during the first year.

The voluntary course taught in the second and third years.

The study of higher geodesy, like that of advanced mathematics, is left optional to the students, and for the same reason —that an acquaintance with the subject is not universally required. The course carries the obligatory instruction in surveying to a higher point; it includes instruction in the use of scientific instruments, in operations of geodesy, astronomical observations, the measurement of bases and altitudes, and in the construction of maps and charts. Geodesy.

The course of history embraces both ancient history, that of the middle ages, and modern history, with special reference in later times to the growth of the Prussian kingdom and the development of its political institutions. History of literature, history of philosophy, universal geography, and physical geography are subjects of too general a character to call for any remarks. History. History of literature, &c.

Chemistry is taught with special reference to its applications to military purposes. The course, which only enters into the last year, comprises both inorganic and organic chemistry; to the former, six months, to the latter, three months are devoted. Practical manipulations are also performed in the analysis of such substances as gunpowder and its component materials, cements, mortar, stone, and other building materials. Instruction in photography does not form part of the course of chemistry. Chemistry.

The subject of physical science comprises heat, acoustics, optics, magnetism, and electricity. Telegraphy is not taught as part of the regular course, but an officer from the military telegraphic department gives occasional lectures on the subject at the academy; these lectures, however, are not exclusively intended for the students of the academy, but are open to all the officers of the garrison. Physical science.

In modern languages instruction is given in French and Russian during each of the three years, but the study of both languages is voluntary. Very few of the officers are said to acquire fluent conversational power in French, although there is an excellent master in the language. Russian is taught partly as being the representative of the various Sclavonian languages spoken by numerous people with which Prussia is brought in contact, and partly in consequence of the many valuable military works existing in the language. Only a very small number of the students learn Russian, although an acquaintance with it is said to be of great advantage to officers employed in the topographical department of the staff. No professor of English is provided by the academy, but encouragement is given to the study of the language, and a room is set apart for the use of such officers as may combine to take private lessons in it. Modern languages. French. Russian. English.

Time allotted to the various subjects.

The following tables show the number of hours weekly allotted to the lectures in the voluntary and obligatory subjects of instruction respectively, in each of the three years:

I.—Military subjects, attendance at all of which is obligatory.

Subjects.	Number of Hours each Week.		
	First Year.	Second Year.	Third Year.
Tactics - Formal	4	0	0
Tactics - Applied	0	4	0
Military history - From the introduction of fire-arms to the middle of the 18th century	2	0	0
Military history - From the middle of the 18th century to the French revolution	0	2	0
Military history - From the French revolution to modern times	0	0	6
Science of arms	3	0	0
Fortification - Field	2	0	0
Fortification - Permanent	0	2	0
Art of sieges ("*attaque et defense des places.*")	0	0	2
Military surveying	0	1	0
Duties of staff officers	0	0	3
Military geography	0	4	0
Military administration	0	1	0
Military hygiene	0	0	1
Total number of obligatory hours per week	11	14	12

II.—Non-military subjects, out of which a student is allowed at his option to select a certain number.

Subjects.	Number of Hours each Week.		
	First Year.	Second Year.	Third Year.
Mathematics	9 (obligatory)	6	6
Higher geodesy	0	0	3
General history. - Ancient history and that of the middle ages	4	0	0
General history. - Modern history	0	4	0
History of literature	0	0	4
Introduction to the history of philosophy	0	2	0
History of philosophy	0	0	1
Universal geography	4	0	0
Physical geography	2	0	0
Chemistry	0	0	4
Physical science	0	4	0
French	6	6	6
Russian	2	2	2
Total	27	24	26

The course of instruction is chiefly theoretical, and during the winter months, entirely so.* The officers have no drill to attend, and no steps are taken to employ them as staff officers at the field days of the garrison. Riding is not taught, but those who desire instruction in it are enabled to take lessons at a cheap rate in the Royal Riding School, and many of the officers avail themselves of this opportunity. During the month of May and June, however, in all three years one day of each week is given up to out-door work. The officers are on these days employed in the neighbourhood of Berlin in making reconnaissances, in tactical schemes for the disposition of troops on ground pointed out to them, and in preparing projects for throwing up field works, for defending positions, and for placing houses, villages, and railway stations in a state of defence. Visits are also paid to the most important military establishments, such as the gun foundry, the powder manufactory, the arsenal, the fortress of Spandau, &c.; the experimental practice of the artillery, and operations in pontooning and bridging by the engineers are also occasionally attended. The practical instruction given to the officers during their first year is limited to these occasional days; but for the students of the second and third years, the month of July, on the termination of the lectures, is entirely given up to practical work. With the second year's students this time is devoted to surveying; they first execute the triangulation of a certain extent of tolerably open country, and then fill in the details and produce a finished survey of it; after this, they are sent to some hilly district for practice in hill sketching. The officers of the third year similarly, during the month of July, go through a practical course of staff duty before finally quitting the academy. They are taken under the charge of the professor of the subject on a staff expedition (*Generalstabsreise*), similar to that which is annually made by the staff officers of every army corps. During this expedition they are frequently required, in addition to the other duties they have to perform, to draw up tactical projects for the disposition of troops, the defence of positions, &c., and to make reconnaissance sketches. In completing all such sketches and reports the same rapidity of execution is exacted as would be required from a staff officer on service.

The instruction chiefly theoretical.

Practical instruction on one day a week during the summer;

and during one entire month in the second and third years.

Instruction in staff duty.

The War Academy is the only military school in Prussia at which the system of lectures to large numbers is followed; and it is adopted here more as a matter of necessity, owing to the want of accommodation and of a sufficiently numerous

Method of instruction by lectures to large numbers.

* Tables of the daily arrangement of the studies will be found in the Appendix, page 581.

staff of masters, than from choice. All the officers of the same year, upwards of 50 in number, instead of being broken up into small classes, as is usually the case, attend lecture together. It is, however, in contemplation, when increased accommodation is provided, to introduce the usual Prussian system of "parallel classes." At present it is only in modern languages, and to a partial extent in mathematics, that this system is followed. In French and Russian the students are classified in divisions, not according to years, but according to their knowledge of the languages, and the number in each division is limited to 16. In mathematics the general instruction is conveyed by lecture, but a certain number of the hours assigned to the subject each week are devoted to working questions (*Applications-stunden*), and for this latter part of the work the students of the first year, with all of whom mathematics are obligatory, are arranged in two divisions. The officers who voluntarily study higher mathematics in the second and third year are not sufficiently numerous to make a similar arrangement necessary in their case.

Except in languages and mathematics.

Text books not employed.

No text books are employed, and even printed outlines of the lectures do not appear to be furnished, as is done at most schools in Prussia. Very copious notes are, however, usually taken in the lecture-room, though they are not exacted, and are not shown up to the professors. Essays and memoirs are frequently written during the course of instruction, but only in connexion with the lectures on the military subjects. These essays are not given at any fixed times, but one occurs generally every two or three weeks. Some of them have to be done in the lecture-room within a given time—generally two hours; others are written by the students in private out of lecture hours. The subjects for the latter are sometimes set by the professor, at other times they are left to the choice of the individual, subject to the professor's approval. It was mentioned that in connexion with the course of staff duty, for instance, such a subject for an essay would be set as "An account of the arrangements required "for distributing a given force in cantonments (*Dislocations-*"*Einrichtungen der Truppen*) on the eve of a campaign in "some particular country." All these compositions are carefully looked through and corrected by the professor, and before being returned to the writer are also examined by the Board of Studies; their merit to a slight extent influences the final estimate of an individual's work.

Written compositions frequently exacted in the military subjects.

The lectures strictly professorial.

The lectures are strictly professorial in character; there is no questioning and answering as with the younger students at the War Schools. This, as well as *vivâ voce* examination of any kind, is expressly prohibited, as being inconsistent with

the age and rank of the officers. In military history, however, a singular system is adopted, of requiring the students of the third year occasionally to deliver dissertations in the lecture-room, on subjects either selected by themselves or proposed by the professor; before being called upon in this manner, everyone is allowed ample time for preparation and study of his subject.

Description of a lecture on military history.

By the courtesy of the Director of the Academy, an opportunity was afforded of attending a lecture on military history, given to the officers of the third year. The subject was the early part of the campaign of 1866 in Bohemia. The first portion of the lecture was occupied with a criticism by the professor on a memoir which had been set by him a few days previously, and had been sent in by the officers. The subject of the memoir referred to the dispositions which might have been made by an Austrian detachment of a given strength, supposed to have been pushed forward to watch the frontiers before the actual declaration of war. The professor pointed out in general terms the mistakes which, in his opinion, had been made in the memoirs (without, however, alluding to individuals), and gave his own views on the subject. The criticism concluded, he proceeded to give a lecture on the subsequent distribution of troops which should have been made by the Austrians, with special reference to the disposition of outposts, guarding important railway stations, and securing the means of rapidly concentrating their forces. Fifty-one officers were present, all of whom appeared to take very full notes of the lecture; no general map was used by the professor, but each officer was furnished with the staff maps of the country, on which he followed the movements referred to by the lecturer.

Examinations only at the end of the first and second years.

There are now no examinations at the academy during the course of each year's instruction, but the essays and memoirs periodically written, although chiefly intended for practice, afford the Board of Studies a means of testing the progress of each student. The officers of the two lower divisions, however, have a general examination at the end of the first and second year's course. These examinations are entirely on paper, and are of a somewhat peculiar character, differing considerably from examinations as ordinarily conducted in England. In connexion with each course of lectures, instead of a paper of questions, a single essay only is given, for writing which five hours are allowed. The subject is selected by the Board of Studies from a number which are proposed by the professor. The essay has to be written in the presence of the professor, but the students are allowed

Character of these annual examinations.

to make use of the notes which they have taken at lectures, though not of books or any other assistance. The examination essays are in the first instance looked through and marked by the professors, and subsequently by the Board of Studies, to each member of which the duty of examining in a particular subject is assigned. The compositions are afterwards returned to the writers with remarks upon their execution; but although the officers are arranged in order of merit by the Board, the list is not made public. The question whether an officer shall be allowed to return to the academy for the following year's course, is determined by the result of these annual examinations.

No final examination at the end of the third year.

Its place supplied by essays written during the year.

At the end of the third year there is no general examination for the officers quitting the academy. Instead of this, several subjects for long essays are set in the course of the year, generally about March, out of which an officer is required to select one in each branch of instruction. For the completion of these essays a period of about three months is allowed; they are written in private, and any assistance that can be obtained from books may be employed; in fact they are much like prize exercises at the universities. In addition to the essays on subjects proposed by the Board of Studies, the officers are also allowed to send in other compositions on subjects entirely selected by themselves, in connexion with the course of lectures during the year. The object of these essays, and of the written compositions of all kinds required from the students at the academy, is expressly stated to be not so much to test positive knowledge of a subject as power of reflection and judgment (*Urtheilskraft*), cultivation of the reasoning faculties (*Ausbildung des Verstandes*), and intellectual ability (*Geistesthätigkeit*); it is by the display of these qualities, and by its general style and arrangement, that the merit of each composition is estimated.

Final estimate of each individual's attainments.

The essays written during the third year, like those which form the examinations at the close of the two previous years, after being looked through and marked by the professors, are forwarded to the Board of Studies and the director, by whom they are subjected to further revision. The final estimate of each student's attainments is determined at a general meeting of the Board of Studies, and is founded mainly upon the results of the examinations held at the close of the first and second years, and upon the essays written during the third year, but also to a certain extent upon all the work done since admission to the academy. The officers are not arranged in order of merit; every one, the general result of whose three years' work comes up to the required

The students not arranged in order of merit.

standard of "satisfactory" (*befriedigend*), receives a certificate stating that he has passed through the school, and announcing in considerable detail the merit shown by him in each branch of the instruction. These certificates are made out after the conclusion of the month's course of practical instruction during July, and are forwarded to each officer through the authorities of his regiment. No list, however, of the students who have passed is published, and no one has any means of knowing the comparative merits of his colleagues.

But receive certificates of qualification.

At the same time, though the students are not strictly arranged in order of merit on quitting the academy, certain distinctions are held out to those who have specially distinguished themselves during the course. The ablest are reported by name to the King at the conclusion of the course of practical staff duty. This, however, is an extremely rare distinction, and is confined to those who have displayed very peculiar talent likely to fit them for employment on the staff. The chief of the staff of the army is also made acquainted with the names of these officers; they are sent, after quitting the academy, to do duty for a period of 10 months with the arms of the service to which they do not belong, and at the conclusion of this period reports of the zeal and ability they have shown are forwarded to the chief of the staff.

Distinctions awarded to peculiar ability.

The best students reported by name to the King.

A certain number, without being specially named to the King, are recommended simply for employment with the other arms, to which they are attached for 10 months. Even this recommendation, however, is only made in favour of about 10 or at most 12 of the officers quitting the academy each year.

Others attached to the various arms.

Others are mentioned by name to the Inspector-General of Military Education, or to the chief of the topographical department, or, in the case of officers belonging to the artillery or engineers, to the Inspectors General of these services.

Honourable mention accorded to others.

In all the reports which are thus made, a sort of classification of the officers is adopted, which is founded upon their special abilities in particular subjects. The certificate granted at the War Academy is not considered, as in the case of the Staff College in England, to prove an officer's fitness for every branch of staff employment; individuals are specially mentioned as fitted for particular departments, according to the qualifications which they possess. Good draughtsmen, for instance, are noticed as being suited for employment on the survey; good linguists for branches of

The students are also classified according to their special capabilities.

And recommended for employment in particular departments.

the topographical department where a knowledge of languages is necessary. Some are mentioned as most suited for office employment, others for active staff duties, while others again are brought to the notice of the Inspector-General of Military Education as chiefly fitted for appointments as instructors in the military schools. Personal qualities and general character, as well as the capacity shown for practical work, are also taken into consideration in these reports, especially in determining the question of fitness for staff employment. Thus, for instance, it was remarked that an officer who was not a good rider, or who was deficient in practical qualities, would not be recommended as fitted for the active staff, however great ability he might have shown in theoretical subjects; he might be mentioned as suited for office work, or for an educational appointment. In noticing the special qualifications of individuals in any subject, the professor of the course is always consulted; the final judgment in regard to intellectual ability is given by the Board of Studies, and by the director in regard to personal character. In all cases greater value is attached to marked excellence in any one subject than to general mediocrity in all, even though the actual numerical value of the predicates or marks gained by the latter might be greater. Indeed one of the chief objects of the course of instruction at the academy is expressly stated to be the cultivation of special abilities.

The highest distinction gives no claim to an appointment.

None of the distinctions, however, which are awarded, even to the ablest students of the academy, give an actual claim to employment of any kind. The only practical advantage which is with certainty secured to those who distinguish themselves at the school, is that of being attached to the other arms of the service for a period of 10 months. This opportunity of practical instruction is not afforded to all the officers who pass through the academy, but is confined exclusively to the few of the most proficient who are specially recommended for it; the others, on the conclusion of the month's course of staff duty in July already described, return to their own regiments, with which they continue to serve, awaiting their chance of appointments.

No certainty of reward is offered even to the best students.

Formerly a certain number of the best officers at the War Academy were sent each year to the topographical department, and after employment there for two or three years, two of those who most distiguished themselves were permanently appointed to the staff. Even this stimulus to competition does not now exist. No fixed number of appointments either in the topographical department or in any other

branch of the staff are exclusively reserved as a reward for success at the War Academy, and even the most distinguished students have no positive certainty of staff employment. Any regimental officer, without going through a special course of instruction, is eligible for appointment to the staff. At the same time, the great majority of the officers of the staff are War Academy men, and the ordinary, though not the sole, means of obtaining admission to the department is by passing through the school.* The best officers of each year at the academy—those who have been recommended for service with the other arms—are generally, within a short time after the completion of this service, attached to the staff for temporary duty (*commandirt zur Dienstleistung beim Generalstab*). If they give satisfaction while so employed, they are after a few years taken on to the permanent establishment, and are assigned to various departments according to the special qualifications they have shown. It is not, however, a necessary condition of employment on the staff that an officer on quitting the War Academy should have been recommended for service with the other arms. Even those who have not been selected for this distinction may, if officers are required, be attached to the staff immediately on quitting the academy; but in such cases, when definitely taken on to the permanent establishment, they rank below their colleagues of the same year who have first been attached to the other arms. Other officers who are not selected for the highest reward—that of employment on the general staff—are appointed adjutants on the staff of the army corps or divisions; others obtain appointments as instructors at the War Schools and similar educational establishments. It is stated that in practice, as a general rule, an appointment of some sort or other is obtained within two years after leaving the academy, at least by those whose merits are decided.

But they generally obtain staff appointments within a short time.

Or are appointed adjutants or instructors at schools.

The system of competition is to a certain extent recognized at the academy, in the distinguished mention already described as awarded to the most able students. At the same time, as the candidates are not strictly arranged in order of merit, there may perhaps be some vagueness in the standard of comparison adopted. Moreover, as the distinctions awarded do not afford a *certainty* of any practical advantage in the way of prior claim to appointment, they probably afford but

Competition partially recognized at the academy.

But not prominently put forward as a stimulus to industry.

* It was remarked, for instance, that out of 25 officers employed in the topographical section of the staff only two had not passed through the War Academy.

little incentive to competition. There is neither any very keen stimulus in this respect among the officers themselves, nor is any strong pressure to work put upon them by the authorities. Twenty hours attendance at lecture each week are nominally obligatory, but it is said to be by no means difficult to obtain leave from lecture if the permission is not asked too often. The whole system of the school proceeds on the principle that reliance should be placed upon the students themselves, and that their selection of subjects, and the amount of study they wish to devote to each, should to a great extent be left to their own option. The great object kept in view is not to demand a uniform standard of attainments from all alike, but to encourage individuals to aim at excellence in those subjects for which they have a natural taste. There is no attempt, as at the French Staff School, to make the officers study under the supervision of the professors, nor is there the stimulus of constant competitive examinations as at our own Staff College. This system of trusting to voluntary action on the part of the students is said to have the most satisfactory results; it produces steady industry in all, and in many gives scope for the display of very high ability in special subjects. The present director, Lieutenant-General von Etzel, expressed a most decided opinion against the introduction of a system of keen competition among the students. Whatever advantages such a system might be supposed to possess in the case of junior schools, he maintained that it would be entirely unsuited to such an establishment as the War Academy. It is urged that the results of a mere examination afford no test of many of the practical qualities which are essential to a military man, whereas by the system of certificates and reports adopted at the War Academy, these points are taken into consideration. The introduction of strict competition would also, it is considered, interfere with the classification of the students according to their individual qualifications, and above all would almost entirely prevent the cultivation of *specialités*, to which so high an importance is attached. The absence of competition is certainly not considered to be unfavourable to industry; there is no complaint of idleness; the director stated that during the two years he has been at the academy, he has never had occasion to reprimand an officer for inattention to his studies, never—to use his own expression—"to employ a harsh word" (*ein böses Wort*). Failure to obtain the ordinary certificate on quitting the academy is almost unknown, indeed it was remarked that such a contingency could scarcely occur, as want of industry

Reliance is mainly placed on the voluntary action of the students.

Objections entertained to a system of strict competition.

Its rejection not unfavourable to industry.

Final failures are very rare.

or ability would be discovered at an earlier period by the results of the examinations held at the close of the two first years, and in such a case an officer is not allowed to continue at the academy. Only two cases of dismissal have occurred within the last two years.

Favourable opinion entertained by the director of the results of the War Academy.

In the opinion of the director the results of the system of the War Academy are highly satisfactory. The certificates required from commanding officers as a condition of admission, as a rule, secure a good knowledge of regimental duty in the candidates. It cannot, indeed, be said that all who gain admission are equally fitted for active employment on the staff, but the academy does not profess to require such qualifications, or to prepare officers exclusively for staff employment. Even in connexion with the General Staff there are so many various duties, besides those of an active military character, that there is room for the employment of men of very different qualifications; and the demand for teachers at the educational establishments affords an opportunity of employing those who are of a more theoretical turn of mind. It is allowed that in some cases the prospect of spending three years in Berlin, instead of at regimental duty in country quarters, may be the chief inducement with candidates to compete for admission to the academy; but it seems to be thought that in the great majority of cases the candidates admitted are the most intellectual men in the service, and that the ability of the army is well represented. It is also considered that great advantage results to the service from the number of highly educated officers who, after having passed through the academy, are distributed throughout the army. They not only introduce an intellectual tone into the service, but also in regard to practical work the instruction they have had renders them available, on their return to their regiments, for any extraordinary duties which may occur out of the ordinary routine. They afford a supply of officers for performing the duties of regimental judge-advocates, for directing on service the engineering work of regiments—such as strengthening detached posts, throwing up entrenchments, &c.—for acting as assistants to the staff, and for performing other services which require more than a mere knowledge of ordinary regimental duty. General von Etzel stated that, on assuming the charge of the establishment, he made inquiries among general officers in command of divisions and commanding officers of regiments, as to their opinions regarding the results of the War Academy, and with only one or two exceptions, although differences of opinion existed as to details, and improvements in certain points were suggested

It attracts really able officers as candidates.

And qualifies them for many practical duties.

by individuals, the general opinion was decidedly favourable. It does not by any means appear to have been an invariable rule that the War Academy has furnished the most distinguished generals in the Prussian service; but it seems that at least a majority of the officers at present holding high commands have been at the academy and have served upon the staff.

The academy not so favourably regarded by some officers.

It should be remarked that the extremely favourable opinion expressed by the director as to the system of the academy does not appear to be shared by all officers in the Prussian army. The length of time for which officers are kept away from military duty—the extremely theoretical character of a great part of the course—and the admission of such subjects of general instruction as philosophy, history, &c., entirely unconnected with military education—are by many thought serious defects. These general subjects, as stated in the Report of the Commissioners of 1856, "have probably "been introduced from the school having a double object, "that of giving a diplomatic as well as a military education. "This was the original idea of Frederic the Great, who in "all his plans of military teaching, laid a great stress on the "general literature which he himself valued so highly." A somewhat similarly diffusive course of study was at one time pursued in the old Division Schools, but in the successive changes made in these institutions it was gradually abandoned, and in their present representatives, the War Schools, the instruction is limited entirely to military subjects. The old system of attempting to combine a general with a professional education still lingers at the War Academy, but it is believed that there is a strong feeling among many officers that the greater number of the non-military subjects should be excluded from the course, and that the instruction should be made altogether of a more practical character. In a military point of view the completion of general education can perhaps scarcely be thought a sufficient reason for keeping officers three years away from their regiments; the extremely theoretical character of the instruction may also probably make men of active military habits indisposed to compete for admission to the academy—especially as the inducement of a certainty of reward at the conclusion of the course is wanting, and as it is possible to obtain the highest prizes offered to the students of the academy without three years' laborious study at the school.

Objections to the too theoretical character of the instruction.

Merits of the system of instruction.

Notwithstanding, however, some obvious defects, there are several points in the system of the War Academy which appear deserving of notice. In the military portion of the

instruction the principle is prominently kept in view, that the establishment is a general school for officers of all branches of the service, and not a training school for those of the special arms. The lectures are intended to convey the information which would be useful to a general or staff officer, as distinguished from the knowledge of technical minutiæ required in an officer of artillery or engineers.

Though there is a deficiency of practical instruction, the limited amount of time devoted to it appears to be generally well employed, and the month spent on practical staff duty, during the *Generalstabsreise*, by the students of the third year can hardly fail to give a most useful insight into the duties of staff officers on service. The encouragement given to the students to cultivate those subjects for which they have a natural taste undoubtedly produces attainments of a high order in individual branches of instruction. The classification of the officers at the end of the course, according to their special abilities and the qualifications they possess for the discharge of particular duties, introduces a principle which appears well worthy of imitation in any institution intended to prepare officers for employment on the staff of an army.

GENERAL REMARKS ON PRUSSIAN MILITARY EDUCATION.

1. While in France the system of military education has been little altered during the last 13 years, in Prussia it has in the interval undergone constant extension and improvements. The chief alterations that have taken place are as follows:— Alterations in Prussian military education since 1856.

(*a.*) All the educational establishments have been very much enlarged, owing to the increase in the army which has taken place since 1866. Enlargement of all establishments.

(*b.*) The educational requirements for a commission remain in principle the same as they were—the double examination for the rank of officer, and the exaction from every candidate for a commission of proof of both general and professional knowledge being still the peculiar feature of Prussian military education. There has been, however, a constant tendency to raise the standard of the preliminary examination in subjects of general knowledge, and to insist more Greater importance attached to liberal education as a condition of admission to the army.

strongly upon a sound liberal education as a condition of obtaining a commission. The number of *Abiturienten*, or men who have passed through the complete course at a public school, entering the army annually is now four times as great as it was in 1856, and there is the strongest wish still further to increase their number. These young men may be compared to those who come from the highest forms of public schools in England. A large number of them seem to go into the artillery and engineers.

Changes in the Cadet Schools.

(*c*) The Cadet Schools in their general character are unaltered; the introduction of the peculiar class of the Ober-prima in the Upper Cadet School at Berlin is the most important modification made in their organization. The proportion of officers supplied by the Cadet Schools continues much the same as it was in 1856. The feeling in the army, however, against preparatory military schools appears to be increasing; a strong opinion is entertained as to the narrowing effects upon the mind of exclusive class education; and a preference is very generally exhibited for officers who have had the ordinary education of civil schools. At the War Schools, the Artillery and Engineer School, and the War Academy, a decided opinion was expressed as to the intellectual superiority of the *Abiturienten* over those who have been educated in the Cadet Corps.

The feeling against them increased.

The education of officers of artillery and engineers much modified.

(*d.*) The arrangements for the professional instruction of officers of the scientific corps have been very much altered. These officers now have their education up to the time of obtaining their commissions in common with candidates for the line; their *special* instruction does not commence at the Artillery and Engineer School until they have been in the service three or four years. For the artillery the course at this school has been reduced to one year, and made more strictly practical in character.

The instruction at the War Academy made more practical.

(*e.*) The course of instruction at the War Academy, or Senior Department, has been considerably modified; though still comprising many subjects of an entirely unprofessional character, their number has been reduced; the attention of the students is more concentrated npon military studies than formerly, and a larger amount of time is devoted to practical

work. In short, the object has been to render the instruction less purely theoretical than it formerly was.

(*f.*) The most important change, however, which has been made is in regard to the War Schools—the schools at which officers of all arms receive their *professional* instruction. Since 1856 they have been entirely re-organized, and placed under the direct control of the Central Educational Department; a much higher class of teachers are employed; the character of the instruction has been greatly improved; and attendance at one of these schools is, with rare exceptions, made compulsory upon every one before obtaining a commission. These schools hold a most important position in the Prussian system of military education, and the greatest pains are bestowed on making them answer the purpose for which they are intended—that of giving a thoroughly practical instruction in military subjects to candidates for commissions. The improvements made in the War Schools show the greatly increased importance attached of late years in Prussia to the professional instruction of officers.

Complete re-organization of the War Schools.

2. However different the French and Prussian systems may be in some respects, they both agree in this—that no attempt is made to give a special military education at an early age, that a general education is made the ground-work of the professional training, and that at least up to the age of 17 or 18 the future officer receives the same kind of education as the civilian, and in the great majority of cases receives it at the ordinary schools of the country. In Austria also the same principle seems now to have been adopted. The cadet schools in Prussia are no exception to the rule, for the instruction at them, except in the two upper classes at Berlin, is the same as at civil schools. The principle of deferring military education to a comparatively late age is indeed in Prussia carried even to a greater extent than in France, for all professional instruction is postponed until after the service has been entered, and regimental duty been performed for nearly a year. The few who enter the army from the Oberprima and Selecta of the Cadet Corps (not amounting to 70 each year) are the only individuals who receive any military instruction before joining the service, and in their case this special instruction does not commence until the age of 17. So strongly is this principle insisted upon that even for the artillery and engineers there is no preparatory military education, and the special instruction of the officers of these

Late age at which special military education commences.

It is postponed until after entering the service.

Even for the artillery and engineers.

arms is not given until after they have been some years in the service. The idea in Prussia is that a young man can derive no advantage from studying the *theory* of the military profession until he has learnt the *practice* of it. "What use "can it be," it was said, "to talk to a lad of the principles "of tactics, when he does not even know the movements of "a battalion, and perhaps has never seen one on parade?"

But is then compulsory on all officers.

3. After, however, entering the service *all* the officers of the Prussian army receive a careful professional instruction —that given at the War Schools. The course is of an essentially practical character, comprising only strictly military subjects, and excluding such studies as mathematics and even languages.

No special training necessary for staff officers.

4. The officers of the staff do not necessarily receive any special training previous to their appointment; but in Prussia this is of less importance, as from the professional education which every officer has had those appointed to the staff, even if they have not passed through the Senior Department, must at least be acquainted with field sketching and military regulations, and know something of fortification and artillery. Moreover after appointment means are taken, in the "staff expeditions" which occur annually, to instruct them in their practical duties, and (as is the case also in France with the officers of the Staff Corps) to ensure their keeping up the knowledge of field sketching and reconnaissance which they had previously acquired.

Connexion between civil and military education.

5. The connexion which exists in Prussia between the military system and the general education of the country is remarkable. The *Portepée-fahnrich* examinations are not only based on the course of instruction at civil schools, but have been also used as a means of raising the character of the education given at these schools. On the one hand, the advantages offered to *Abiturienten* and to those who have been at a university indicate a wish to encourage men of liberal education to enter the army as officers; on the other hand, by making exemption from the ordinary period of compulsory service in the ranks dependent (among other conditions) on educational attainments, the military system has been employed as an engine for stimulating education among the middle classes.

Superintendence of the educational system.

6. The general management of military education is vested in a single officer, the Inspector-General. He is assisted by two Boards or Councils, the Board of Studies in matters connected with the general system of instruction, and the Supreme Examination Board in regard to the examinations and qualifications for commissions. The system of education has been still further centralized since 1856, especially in the case of the

War Schools; and much of the progress that has been made is ascribed to the unity now given to the whole system of instruction. At the same time each of the educational institutions has its own Board of Studies, similar to the *conseils d'instruction* at the French schools, who are charged with the general control of the course of study and with the duty of making suggestions for its improvement. Several of the professors, both civil and military, are always members of this Board; so that the benefit of their practical experience is secured, and the control of the instruction is never left entirely in the hands of one man, nor even exclusively of military men. The introduction of the civilian element into these Boards is deserving of notice; not merely the professors of the schools, but eminent men connected with the University of Berlin are employed upon them, and have a voice in determining the system of military education. The long period for which individuals are retained in posts connected with the direction of the educational system has been previously noticed—appointments on the Board of Studies and the Examination Board are to all intents and purposes permanent. It is considered that the benefits of experience would be lost by frequent changes of the members.

Boards of Studies for the respective schools.

On which civilians as well as officers are employed.

7. In discipline the heads of the various schools are almost entirely supreme. At the War Schools the young men are subject to military law, being already in the army; at the Cadet Schools this is not the case, but the discipline is strictly military in character. At both establishments the regulations are extremely stringent, and the slightest irregularity entails punishment. But the importance attached to the exercise of moral influence over the pupils, the personal interest taken in them, and the kindly relations existing between them and the officers, make the system of discipline much less rigidly military than it is at the French schools. Both at the War Schools and the Cadet House specific punishments are attached to idleness.

Strictness of discipline at all the schools.

8. In the appointment of the heads of the various schools and of the subordinate officers employed at them, great attention seems to be paid to selecting individuals fitted for the posts both by educational experience and by personal qualities. There appears to be rather a general opinion that the instructors at most of the schools are underpaid, and that this, combined with the preference frequently given to active military life, prevents the posts being much sought after by the ablest officers. On the other hand, however, selection for such appointments is always regarded as a distinction; and in the Prussian army mere honorary distinctions, alto-

Principle on which educational appointments are made.

gether irrespective of material advantages, are held in much higher estimation than is probably the case in any other service. As a general rule there is no fixed limit to the tenure of appointments, but in practice they are seldom held continuously for more than five or six years.

Contrast between the French and Prussian systems in regard to competition.

9. The most marked point of contrast between the French and Prussian systems of military education consists in the thoroughly competitive character of the former. In Prussia the principle of competition, though to a certain extent recognized, is little applied in practice, and never perhaps fully and strictly carried out. For promotion to the highest class (the Selecta) of the Berlin Cadet house there is considerable competition among the pupils, and admission to the War Academy is obtained by competitive examination open to all the officers of the army ; but even in these two cases personal and other considerations come more or less into play, and the rewards cannot be said to be thrown open to pure competition. All the other military examinations are simply qualifying, and there is no attempt to afford the stimulus of publishing a list of the candidates arranged in order of merit. In fact the term "competitive examination" scarcely seems to be understood in Prussia. The pecuniary assistance afforded by the State for the education of boys in the Cadet Schools is dependent solely on the circumstances and services of the father, not on the abilities of the candidate himself. Few material advantages result from success in any of the examinations. At the same time in nearly all cases the honorary distinction of being reported by name to the King is held out as a reward to those who display special ability. And this distinction, owing to the great personal influence exercised by the sovereign over promotion, is probably more than a mere empty honour.

Objections universally entertained to the adoption of the competitive system.

10. The objections expressed to the introduction of a competitive system such as that existing in France have been mentioned in the account of the War Schools. They appear to be universally entertained in the Prussian army. Of all the officers with whom the question was discussed, one only advocated the adoption of competition as an element of military education. Of the others, none foresaw any advantage from its introduction, while the great majority entertained a most decided objection to it. The object in Prussia seems to be, not to attempt to establish an accurate *comparison* of the educational attainments of a number of individuals, but to form a *general estimate* of the abilities, character, and military capacity of each. The army generally are not considered to be losers by the rejection of the com-

petitive principle; the system of inspections and of reports from inspecting officers is so elaborate, and so many checks are provided, that the character and abilities of individual officers are well known; and appointments, certainly as a general rule, are said to be made on the ground of real merit. Even at the less advanced schools, such as the Cadet Houses and the War Schools, without the stimulus of competition, though there may be fewer instances of intense study on the part of individuals, there is said to be fair industry among the whole body of students. At the same time the great inducement to exertion afforded in a country where military service is compulsory, by the desire to escape duty as a private soldier, must not be forgotten.

Vagueness in the standard of examinations, and laxity in enforcing regulations.

11. It must be noticed that there is (probably in part owing to the absence of competition) some vagueness in the standard of all the Prussian examinations. There appears indeed in general to be less strictness in enforcing the regulations connected with military education in Prussia than in France. The regulations themselves are very stringent, but exceptions are constantly sanctioned—for instance, in the length of time which a pupil is permitted to remain in the same class of the Cadet Schools, in the number of failures allowed in the various examinations, &c. There is an evident disposition to put as lenient an interpretation as possible upon all regulations.

Care bestowed on the method of instruction.

12. The very great care bestowed upon the method of instruction at all the Prussian military schools, is extremely remarkable. Individual instructors are not left to follow out their own ideas of teaching, but careful regulations are issued for their guidance by the Inspector General of Education, to which all are required strictly to conform. The system of small classes, in striking contrast to the French plan of lectures to large numbers, is a remarkable instance of the anxiety to devote attention to individual students, and to adapt the instruction to varieties of ability. But the most remarkable feature of the system of teaching is the care bestowed upon the higher objects of education, upon forming and disciplining the mind and encouraging habits of reflection. The regulations for the instructors at the various schools over and over again assert that the great object to be kept in view is, not merely to impart a certain amount of positive knowledge, but to develope the intellectual faculties and to cultivate powers of thought and reasoning. The teachers are warned to avoid minute details and barren facts, which merely burden the memory and are soon forgotten, and to direct attention to broad principles, which will lay the foundation for further

And on the cultivation of the mind.

As distinguished from a mere knowledge of detail.

individual study in after life. With the same object in view, the examination questions are calculated, not merely to serve as an exercise of the memory, but to test an intelligent acquaintance with a subject, and the power of turning knowledge to a useful purpose. The specimens of the examination questions which have been given, will show how much the Prussian system in this respect differs from that pursued in English military schools. In the Prussian method of instruction there is almost an entire absence of the minute detail as to numbers, dates, and facts to which so much importance is attached in all military teaching in England. The system pursued in regard to private study is in accordance with the same principle of aiming at the development of the mind. The students are not, as in the French schools, forced to work under the constant supervision of instructors, but are left to study in private, in order to teach them self-reliance and to encourage habits of work. The great importance attached at all the schools, and more especially at the War Academy, to the cultivation of special talents is also a striking feature of the system of instruction; the attainment of a high standard in individual subjects is made an object of much greater importance than average acquirements in all.

Encouragement of self-reliance in regard to study.

And of the cultivation of special abilities.

13. In conclusion a few points of detail may be noticed, in which the course of instruction at the military schools both of France and Prussia presents more or less contrast with that followed in this country.

Military education in France and Prussia contrasted with that in England.

In neither country are mathematics made a very important element in general military education. In France the artillery and engineers receive a very high mathematical training; but for the line little mathematics are required; at St. Cyr the subject is scarcely taught, and even for the Staff Corps the knowledge demanded is limited to what is practically useful for surveying. In Prussia a knowledge of mathematics up to trigonometry is required for admission to the army; but the subject is not taught at the War Schools in connexion with the professional instruction of candidates for commissions. Even in the scientific corps a comparatively small amount of mathematical attainments is exacted from the artillery, and at the War Academy only a low course of mathematics is obligatory on the students. The general principal upon which mathematics are taught in Prussia—even to officers of the artillery and engineers—is, that the higher branches of the subject can only be studied with advantage by a few who have real mathematical talent, and that it is mere waste of time to force the study upon those who have not a taste for it.

Paramount importance is not attached to mathematics.

To the subject of reconnaissance and field sketching great importance is attached in both countries. For the execution of reconnaissance sketches and reports a much shorter time is allowed than at English schools; rapid sketching on horseback is frequently practised; the work has to be done much as it would on service, and comparatively little importance is attached to the mere prettiness and finish of the drawings. In both countries also theoretical instruction on topography is given by lecture, in addition to the knowledge picked up by practice, and there is an examination in the theory of the subject as well as in the manual execution of drawings.

Attention paid to field sketching and topography.

Both in France and Prussia thorough instruction in military law and regulations, in regimental interior economy, in the mode of conducting official correspondence, of preparing returns, and of keeping company accounts, is made a very important element of the education of candidates for commissions. Instruction is also given in the practice of writing military reports as they would be required from regimental officers under various circumstances; and the acquirement of a correct, grammatical and concise style for such reports is strongly insisted upon.

Instruction in military law, regulations, correspondence, &c.

The advantage which is taken in both countries of visits to military establishments, manufacturing departments, and fortresses, to illustrate the subjects taught in the lecture-room, has been noticed in the remarks on the French schools.

Visits to military establishments.

As a general rule at all the French and Prussian military schools proficiency in practical subjects of instruction—such as drill, riding, fencing, gymnastics, &c.—as well as conduct, has more or less effect upon the final result. In France the influence of these subjects is more direct than in Prussia, actual marks being awarded for them; but even in Prussia, though their value is not numerically estimated, they are much taken into consideration. Indeed, in Prussia so great importance is attached to the practical military qualifications (both moral and physical) which go to make a good officer, that their possession is often allowed to compensate for a partial failure in theoretical attainments. A thorough knowledge of drill, both as soldiers in the ranks and as officers in command of troops, and acquired not merely on the parade-ground but also by the study of the drill-book, is made an object of the greatest importance at the schools of both countries. In France especially a large amount of time is devoted to lectures on drill in addition to the practical instruction in the subject.

Practical instruction.

In regard to the study of military history, the practice

Military history.

somewhat varies. In France the subject is taught at the lower school of St. Cyr, but not at the more advanced schools for the scientific corps and the staff, where its place is supplied by military art, tactics, and strategy. At the Staff School, however, the exchange is not considered an advantage. In Prussia an exactly opposite course is followed; the subject of tactics is taught to the young candidates for commissions at the War Schools, while the study of military history is reserved for the older students at the Artillery and Engineer School, and the War Academy. Even, however, at the War Schools the course of tactics is supplemented by historical illustrations, although no complete campaigns are studied.

Modern languages.

A knowledge of at least one foreign language is a necessary condition of admission to the army in both countries. In Prussia, French is obligatory on all candidates in the ensign's examination. In France, for admission to St. Cyr, a choice of five languages is allowed, but at the school itself only English and German are studied, of which the latter is necessary for admission to the Staff Corps. At Metz also German alone is taught. It does not appear that power of fluent conversation in foreign languages is generally acquired by the students, either in the French or Prussian schools.

Importance attached to *vivâ voce* examinations.

Both in France and Prussia an important part is played by *vivâ voce* examinations. At the French schools the examinations are almost exclusively oral; and in Prussia, except for the officers at the higher schools, every examination consists in part of *vivâ voce* questioning, to which the same importance is attached as to the paper work.

Difference in the instruction given to officers of the artillery and of the engineers.

In both countries the special education of the artillery and engineers is conducted at the same establishment, but in both a difference is made in the instruction given to the officers of the two services. In France the distinction is less marked than in Prussia, the theoretical studies being to a considerable extent the same for both arms. But in Prussia, by the modifications recently introduced, the instruction of the artillery is from the commencement conducted entirely apart, and differs very considerably from that of the engineers.

Authorities.

Works and documents consulted.

The various regulations connected with the Prussian army are published at length in Helldorf's "Dienstvorschriften der königlich Preussischen Armee" (Berlin, 1865). A supplementary volume published in 1868 brings down the regulations to the commencement of last year. A more concise and epitomised account of the organization of the army, a brief description of the various departments, and considerable

information regarding the educational establishments are given in Witzleben's "Heerwesen und Infanteriedienst der königlich Preussischen Armee," which is published annually.

The official regulations consulted with reference to individual subjects are as follows:—

Examination for a commission.

I. For the ensign's and officer's examinations, "Verordnung über die Ergänzung der Offiziere des stehenden Heeres" (Berlin, 1861), and "Bestimmungen über die Organization und den Geschäftsgang der Militair-Examinations-Commissionen fur die Eintritts und Offizier-Prüfungen."

Cadet School

II. For the Cadet Schools, "Bestimmungen in Betreff der Aufnahme von Knaben in das Königliche Cadetten-corps" (1867), and various regulations for the discipline and internal administration of the schools, which were furnished by the kindness of the commandant of the Berlin Cadet House.

War Schools

III. For the War Schools, "Bestimmungen uber die Organization der Kriegs-Schulen" (21 July 1859)—which gives a general account of the organization of the schools. A translation of this is given in the Appendix.

"Vorschrift über die Methode, den Umfang und die Eintheilung des Unterrichts auf den Königlichen Kriegs-Schulen" (1859)—giving detailed regulations regarding the course of study and the method of instruction. Translations of extracts from this will be found in the Appendix.

"Dienst-ordnung für die königlichen Kriegs-Schulen" (1859)—containing the regulations for the discipline of the schools.

Printed programmes giving the general outline of the course of instruction (genetische Skizze des Lehrstoffs) in each of the subjects of study are also published.

Artillery and Engineer School.

IV. For the Artillery and Engineer School, "Grundzüge der Verfassung und Einrichtung der vereinigten Artillerie- und Ingenieur-Schule" (1867)—giving a very complete account of the former organization of the establishment. Owing however, to the alterations made in regard to the course of instruction for the officers of the artillery in July 1868, the description does not accurately represent the existing arrangements at the school.

More detailed information regarding the internal administration of the school, the system of instruction, the duties of the various authorities, and the mode of conducting the examinations, is given in the "Specialvorschriften zu den Grundzügen der Verfassung und Einrichtung der vereinigten Artillerie- und Ingenieur-Schule" (1868), and the

" Vorschrift für die Berufs-Prüfung der ausseretatsmässigen Seconde-Lieutenants der Artillerie und des Ingenieur-Corps" (1867).

The Cabinet Order—or Royal Warrant—for the recent modifications in the organization of the school is dated 4th July 1868.

War Academy. V. A very detailed account of the course of study and the system of instruction at the War Academy, and of the objects of the institution, is contained in the regulations recently issued by General von Peucker, Inspector-General of Military Education, entitled " Instruction für den Umfang und die Methode des Lehrganges auf der königlichen Kriegs-Akademie" (22d March 1868).

An account of the organization of the school is given in a memorandum furnished by Lieutenant-General von Etzel, the director, a translation of which will be found in the Appendix. Friedländer's history of the school also contains much valuable information.

ACCOUNT OF THE PRUSSIAN STAFF,

BY

COLONEL BEAUCHAMP WALKER, C.B.,

MILITARY ATTACHÉ AT BERLIN.

The Prussian Staff, which has been completely reorganized since the war of 1866, subserves the double purpose of providing staff officers for the duties of the active army, and of collecting and arranging the statistical, geographical, and historical information necessary for the operations of war; further, it is the school in which young officers temporarily detached from their regiments, after a course of instruction at the Military Academy, have their qualifications tested before admittance to this branch of the army, and the principal office of the trigonometrical survey of the Eastern Provinces of the Monarchy.

The head-quarters of this organization are at Berlin, where a large building is appropriated to the various offices and departments, in which the chief of the staff, General von Moltke, has his official residence. A new building is about to be erected outside the Brandenburg gate, at an expense of 200,000 thalers, or 30,000*l.* sterling.

The staff has two establishments:—

1. The peace establishment, divided into—
   A. Chief *état*, subdivided into
      a. The staff of the commands.
      b. The general staff, *état-major-general*, or *grosser Generalstab.*
   B. The accessory *état*, *neben État.*
2. The war establishment.

The staff of the commands is so complete during peace as to require a very unimportant augmentation, and that chiefly in the lower grades, on the outbreak of war; the framework not only exists, but the officers comprising it are already acquainted with the generals under whom they serve,

and with the officers and troops with whom they have to communicate.

At the head-quarters of each corps there are: a chief of the staff—sometimes a Major-General, more frequently a Colonel, exceptionally a Lieutenant-Colonel—a field officer, and a captain; at that of each division a field officer; there is also a chief of the staff with the General Inspection of the artillery. The subordinate duties are performed by the aides-de-camp, of whom there are two at the head-quarters of each corps, and one with each division and brigade; but these officers, who are not included in the establishments of the general staff, and wear the uniform of their respective regiments, are in no sense of the word aides-de-camp as existing in the English army; they bear the designation of *Adjutant*, and may more properly be compared to our Deputy Assistants and Brigade Majors: indeed the solitary Adjutant is the only assistant to the Major-General in the performance of the brigade duties. In the time of war the staff is further supplemented by *Ordonanz Offiziere* attached as aids to the general officers in command.

The "*Grosser Generalstab*" includes the officers of the staff who are not employed with the commands, and is stationed in Berlin under the personal direction of the chief of the staff. The *Neben* or *accessory État* includes the officers employed in the strictly scientific work allotted to this department. Their appointments being of a permanent nature, these officers do not as a rule participate in the advantage of rapid promotion enjoyed by the staff officers belonging to the *active État*.

The combined staff at head-quarters is subdivided as follows:—

a. The three sections;
b. The section for military history;
c. The trigonometrical section;
d. The topographical section;
e. The geographical-statistical section;
and
f. The map room.

The three sections have the object of collecting and arranging information respecting the home and foreign armies. The home subjects to be treated are the means and warlike institutions of the State, its fortresses, magazines, ports, inland communications, the organization, recruiting, mobilization, armament, equipment, and drill of the army. The warlike systems of foreign nations, the strength and organization of their armies, regulations, and drill, the distribution

of the troops, state of preparation for active service, and their systems of reinforcement and reserves are the further subjects of inquiry. For these purposes the work is divided as follows, according to the division into eastern, middle, or western theatres of war :—

1st Section.—Austria, Russia, Sweden and Norway, Denmark, Turkish Empire, Greece, Asia.

2nd Section.—Prussia and North Germany, South Germany, Italy, Switzerland.

3rd Section.—France, Great Britain, Belgium, the Netherlands, Spain, Portugal, America.

Colonies follow the division of the countries to which they belong.

The duties of the other sections are indicated by their designation, but I shall advert further to their more special ends and objects when speaking of the general application of this important department.

The number of officers actually belonging to the two categories of principal and accessory establishments of the staff is 115, of whom 94 belong to the first, and 21 to the second named branch. In the first there are 17 chiefs of the staff—viz., 13 with the army corps, one with the General Inspection of the artillery, and three at the head of the three sections—47 field officers, and 29 captains.

In the accessory establishment there are four chiefs, five field officers, and 12 captains.

The office establishment, inclusive of the Engineer geographers—who are non-commissioned officers of the Artillery or Engineers serving permanently in the trigonometrical section in place of the officers who were till recently employed temporarily in this office, and of whom there are at present 10—consists of 18 permanent officials, not including a head messenger, two chancery servants, two house servants, and a porter.

The supernumeraries comprise 40 officers attached for a year, 20 for duty with the staff generally, the remainder for surveying; 34 surveyors who are only employed during about five months in each year, and 41 draughtsmen.

The pay of the permanent staff amounts to 206,150 thalers, or 30,922*l.* 10*s.*, the material expenses being 62,250 thalers, or 9,337*l.* 10*s.* Of this latter sum about two-thirds is required for office and surveying expenses; 17,000 thalers, or 2,550*l.*, are allowed for the annual journeys of instruction undertaken by the staff, and 3,000 thalers, or 450*l.*, for allowances to officers travelling for scientific or professional purposes.

The actual sum disbursed for office and surveying purposes is 47,450 thalers, or 7,417*l.* 10*s.*, of which 7,000 thalers, or 1,050*l.*, are recovered by the sale of maps and works published by the staff, 2,000 thalers, or 300*l.*, being derived from the profits of the bi-weekly military paper, "*Militair Wochen Blatt.*"

The expenses of the survey are 25,000 thalers, or 3,750*l.* yearly, about half being absorbed by the field work, and the remainder in the drawing office.

The 40 officers temporarily detached from their regiments receive a small monthly allowance during their year of duty with the staff, the whole amounting to 8,400 thalers, or 1,260*l.* Thus the total expenses of the staff and its various branches, including the survey of the Eastern Provinces, is 41,310*l.*, of which 1,050*l.*, as before mentioned, are recovered, leaving 40,260*l.* as the sum required to be voted.

Besides the duties already mentioned, the staff at headquarters undertakes:—

1. The training of officers for staff purposes. To this end young officers who have passed the prescribed three years at the Military Academy, "*Kriegs Akademie*," are attached for a year to the different sections, where they are required to draw up reports on strategical and tactical questions, critical reports on the military events of past eras, descriptions of the ground embraced in military operations, and of the military organization of foreign countries. These essays, when of special value, are laid before the chief of the staff.

2. The preparation of printed reports on foreign armies, which are distributed to the staff officers employed elsewhere.

At the present moment an elaborate *résumé* of the organization of the British Army is in preparation, and will shortly be published.

3. The contribution of papers on professional subjects to the "*Militair Wochen Blatt*," or military paper.

This publication, which appears twice a week, was formerly edited in the office of the staff, but has lately been in the hands of a responsible editor, a colonel on half pay, who stands however in intimate connexion with the office. The contribution required from the staff is 20 sheets of printed matter annually from the various departments, a much larger amount being furnished, from

which the chief of the staff selects what he considers most suitable for publication.

To compensate the staff funds for the profit formerly accruing from this paper it receives annually 2,000 thalers from the editor.

4. Military tours of instruction, for which a sum of 2,550*l.* is annually granted. These journeys, more especially those conducted by General von Moltke, are a most valuable source of instruction for officers of the staff. All the officers who can be spared from the duties of the office take part in these tours, as also a few staff officers called in from the commands, and a selection from the commanders of regiments.

They are also made on a smaller scale by the staff of the Corps, augmented by regimental officers attached for instruction, under the superintendence of the respective chiefs of the staff.

For the tour superintended by General Von Moltke, the theatre of operations and certain conditions likely to influence them are indicated, a supposed strength is given to two opposing armies, their depôts and means of reinforcement are clearly laid down, and the influence likely to be exerted by the movements of other armies or bodies of troops on their flanks are taken into calculation. According to these data the senior officers present make their plans of manœuvre, employing their juniors in the preparation of all the subordinate arrangements, the movements of the troops, the selection of positions for attack or defence, the arrangements for supply, and for retaining a communication with the base. All these measures are carried out on the spot, and daily reports are made to the superintending officer, which, when necessary, are accompanied by such rough sketches as are usual during the progress of a campaign.

From these materials he is enabled to form an idea in what degree the spirit of the operations has been grasped by the directing officers, and in how far their juniors are instructed in the details of duties which they may hereafter be called on to perform.

5. A large share in the military education of the army generally, by taking part in the lectures given in the various educational establishments, and by acting as members of the commissions of examination and of studies.
6. Officers of the head-quarter staff are also detached to attend the annual corps manœuvres, those taking place in foreign countries, or the active campaigns of friendly allied nations.

The special duties of the sections, although, as I have previously remarked, indicated by their titles, must not be passed over without remark. Of the three sections into which the head-quarter staff is divided, I have already spoken, but omitted to mention that the railway department forms part of the second of these sections, the chief of which selects an officer to preside over and superintend the working of it, and gather materials on inland and foreign railway communication. Certain officers are attached permanently, similarly, in fact, to those belonging to the sections of the accessory establishment, who have not only to make themselves theoretically masters of their subject, but by travelling on the various lines acquire practical acquaintance with the working of railway transport in all its phases. With a view to diffusing this knowledge as largely as possible, all officers of the staff have since 1867 been required to attend a six weeks' course of study with this branch.

The section of military history has charge of the war archives of the Prussian army and of the library of the general staff, for additions to which latter a sum of 1,100 thalers, or 165*l.*, annually is voted.

The staff of the section is occupied not only with subjects of recent and immediate interest, but with the study and arrangement of materials belonging and relating to the wars of earlier date, of which there is a valuable collection, consisting of reports, day books, plans, and other documents, many of them legacies of the prominent actors in the scenes to which they relate. The library is well supplied with the most important works in all languages on military history, tactics, geography, and military science, and is accessible to all officers of the staff. It is from this section that works are offered at prices so moderate as to be readily accessible to the officers of the army, as, for instance, the official history of the war of 1866 ; and the section is now engaged with a translation of Lieut.-Colonel Chesney's lectures on the campaign of 1815, which will be published as soon as completed.

The trigonometrical and topographical sections stand in intimate connexion with each other. Since 1865 the former is charged with the survey of the Eastern Provinces, a work which it is hoped will be concluded in 10 years, under the direction of the chief of the staff. With this view the appointment of permanent Engineer geographers has been substituted for the system by which the whole work of surveying was executed by officers detached for three years from their regiments after having completing the prescribed three years' course at the Military Academy.

Under the present organization there are always 40 young officers attached to the head-quarter staff, but only for one year, their absence from regimental duty having proved detrimental, while the current work is naturally better executed when carried out by permanent *employés*, thus avoiding the interruption caused by constant reliefs.

The topographical section is virtually the executive branch of the combined department to which the trigonometrical also belongs, and I need only point to the ample supply of maps furnished during the campaign, and to the excellent maps of the battle fields of 1866, of which copies were forwarded to the Topographical Branch of the War Office by General von Moltke, to indicate the nature of the work carried out. A credit has latterly been taken for the establishment of a photographic *atelier* and of a lithographic press in connexion with this section. It is hoped by these means to make the general staff independent of private assistance and to facilitate technical experiments.

The geographical-statistical is a new section, the necessity for which arose from the overcrowding of other branches, particularly of the map room. So much material had accumulated in the other branches that it was found necessary to establish a section in which the scattered information could be condensed in the form of statistics. To this end the former geographical sub-section was altered into its present form with an enlarged sphere of work, and the charge of the collection of maps was transferred to it from the map room, which had become so much overcrowded with old materials as to have neither room nor time for the ordinary business of taking charge of the current surveys, and of the maps and charts intended for distribution to the army.

With a view to facilitating the collection of the best geographical and statistical materials all the sections are placed *en rapport* with the new section, to which they are required to forward all special material coming under notice, and all books or pamphlets which contain geographical or statistical information. This section stands also in constant communication with the civil statistical bureau.

The duties of the "*Plankammer*" (map room) are now restricted to the care of the topographical instruments of the original surveys of the topographical section, of new maps prepared for distribution, and of the financial business of the general staff. All the scientific duties of the map room have passed over to the geographical statistical section.

There is no regulation on the admission of officers to the staff, nor is there any direct preliminary examination.

These officers are for the most part selected from three classes :—

1. Those who have completed the prescribed course at the Military Academy.
2. Those who notify their desire to enter the staff.
3. Those who are recommended by their superiors as officers likely to become useful staff officers.

The year of probation at head-quarters, already mentioned, affords the opportunity of forming an opinion as to the capabilities of these officers, who at its conclusion return to their regiments, where they are usually employed as adjutants, or, on the occurrence of vacancies, with the brigades, divisions, or corps.

There is nothing in the shape of competitive examination adopted as a means of selection for service in the staff.

I have had very favorable opportunities for estimating the value of the Prussian Staff, not only in peace but during the campaign of 1866. I have no hesitation in speaking of it in terms of the highest praise, both as a practical as well as scientific body. It is also pervaded by a markedly gentlemanlike tone.

The fact that this branch is presided over by General von Moltke stamps it at once with a character for efficiency. This distinguished officer, who is moreover a man of the calmest judgment, and whose action is guided by the strictest impartiality, has indeed set his mark on the institution of which he is the chief.

It must not be forgotten, when comparing the organization of the Prussian Staff with that of our own and other armies, that as promotion from major upwards takes place by selection through the army, but with due regard to seniority, service on the staff is invariably combined with intervals of duty with the troops, and that an education in the staff is perhaps the most certain road to future employment in higher commands.

BEAUCHAMP WALKER,
Colonel.

Berlin, 28th February 1869.

ACCOUNT

OF THE

SYSTEM OF MILITARY EDUCATION

IN

AUSTRIA,

BY

COLONEL HOPE CREALOCK, C.B.,

LATE MILITARY ATTACHÉ AT VIENNA.

DESPATCH FROM COLONEL CREALOCK.

Sir, Vienna, November 9, 1868.

I have the honour herewith to enclose as many particulars as I have been able to collect on the re-organization of the Military Schools of the Austrian Empire; also the various courses of study which are laid down in the different schools and academies.

The *principle* of education as laid down by Baron Kuhn is, in my humble opinion, excellent, viz., the forming the man before you teach him a profession or trade, as it is easy to build on the broad foundation of a sound general education the superstructure of some special profession or pursuit; it also has a tendency to avoid the great educational evil of the day, viz., "*cramming*," or at all events it postpones it to as remote a period as possible, and the education of youth is fundamentally finished before it becomes necessary to "cram." But many things are well organized on *principle* in the Austrian empire which lamentably fail in practice, and whether Baron Kuhn's system will avail in improving the intellectual qualities of the Austrian army must almost entirely depend on the manner in which its provisions are carried into effect.

The concise and pithy sentence uttered by the Empress Maria Theresa, on founding the Wiener Neustadt Academy, embodies in a few words the whole principle of education as laid down by Baron Kuhn, viz.: "In this school shall be formed *men* only, and of them—*soldiers*."

I have, &c.

H. Hope Crealock, Colonel,
Military Agent, Vienna.

The Chargé d'Affaires,
Vienna.

PRELIMINARY MEMORANDUM

ON THE

MILITARY EDUCATIONAL ESTABLISHMENTS IN AUSTRIA.

According to the new system of military education proposed by the Minister of War purely professional education is not to commence until a boy has reached a more mature age, and his education will be a general one—the same as in the civil schools—until he enters the military schools.

(A.)—The military establishments for the education of youth are as follows :—

(1.) The Military Orphan Asylum.
(2.) The Military Technical Schools.
(3.) The Military College.
(4.) The Military Academies.

(B.)— The schools attached to regiments or divisions for the education of soldiers and non-commissioned officers, cadets, and officers aspirant, are :—

(1.) Regimental, Troop, and Cadet Schools.
(2.) Regimental Officers Aspirant* Schools.
(2.) Divisional do. do. do.

(C.)—The establishments for the education of officers of the various branches of the service, in order to qualify them for the higher grades, &c., are :—

(1.) The Higher Artillery Course.
(2.) The Higher Engineer Course.
(3.) The War School (Staff College).
(4.) The Course for the Instruction of the Military Frontier Administration.

* From regulations which came into force in 1869, it appears that all officers aspirant in the Austrian army will in future be called cadets, and that among such aspirants for commissions there will be two grades, viz., the *Cadet* and the *Cadet-Offiziers-Stellvertreter* (cadet deputy officer)—both ranking above the non-commissioned officers.

(5.) The Central Cavalry School.
(6.) The Medical and Surgical Academy (Josephinum).
(7.) The Military Veterinary Institution.
(8.) The Course for the Intendance.

(A.)—Establishments for the Education of Youth.

The Military Orphan Asylum.

Military orphans and other deserving candidates for the army are supported in this establishment. They are educated at the public schools.

The number of pupils is 150. They pass thence into the other institutions, according to their talents and final destination.

The Military Technical Schools.

At present four in number. It is proposed to reduce them to two. The course is of three years. For plan of studies, *vide* page 381. Number of pupils, 150 in each school. They are educated for the Technical Academy, and to provide good non-commissioned officers for the Artillery and Engineers. They enter at 14 and leave at 16 years of age, at the end of their third year's course of study. Those enter the Technical Academy who have most distinguished themselves; the others are sent either for a two years' course to the Division Schools, or else to the Artillery Officers' Aspirant Schools.

The Military College.

The course is for two years. For plan of studies, *vide* page 380. This is chiefly intended as a preparatory school for the Military Academy at Wiener Neustadt.

The Military Academies.

These institutions are intended to provide the army with officers properly qualified for the various branches of the army.

1. *The Wiener Neustadt Academy.*— The course is of four years. For plan of studies, *vide* page 382. Number of scholars 100 per annum, or a total of 400. The academy is intended for the education of candidates for the Infantry Regiments of the Line and Military Frontier, the Jägers, and the Cavalry.

2. *The Technical Academy* (to be established in Vienna) for the education of the best pupils of the technical schools for the artillery, engineer, and pioneer services. The course is of four years; 65 scholars in each year, or 260 total. Each year's course of study is divided into two sec-

tions, one for artillery pupils, one for engineer pupils. For plan of studies, *vide* page 383.

It is proposed that these officers should be attached to their respective corps in Vienna during their course of study, and should attend lectures at the Polytechnic at Vienna. When this course is over, they are to be attached for two years' service with their corps, or sent direct to go through the higher artillery or engineer course.

(B.)—Schools attached to Regiments or Divisions.

Regimental, Troop, and Cadet Schools.

Besides the troop schools in each regiment or independent battalion, there is one of the cadet schools for the education of all those, from the rank of serjeant downwards, who aspire to the rank of cadet, or who desire to acquire the preparatory knowledge necessary to be admitted into the schools for officers aspirant.

The number of pupils depends on the number of individuals qualified. The course is of two years. For plan of studies, *vide* page 378.

Regimental Schools for Officers aspirant.

(*a.*) For the *Artillery.*—The course is of two years; 50 scholars annually.

(*b.*) For the *Engineers.* } A two years' course for each.
,, *Pioneers.* } Number of pupils according to demand.

Divisional Schools for Officers aspirant.

There is a school of this sort in each of the 23 infantry and cavalry divisions, and for the country gendarmerie.

The course is of two years. Number of pupils not fixed (at present nearly 1,200). For plan of study, *vide* page 379, in addition to which is the special instruction for their respective arms; when they have successfully passed an examination at the end of the course, they become officers aspirant.

(C.)—Establishments for more Advanced Professional Instruction.

The Higher Courses for the Artillery and Engineers.

These are intended for the formation of highly scientific officers for the more important duties and higher command of these arms, and for the army in general. The course is of two years. The number of officer students is not fixed, but must depend on the number of highly qualified candidates of the above arms. They must have served for two years with their corps with distinction For plan of study, *vide* page 384.

The War School (Staff College).

This institution is intended for the formation of officers for the general staff.* The course is of two years. The number of students is 80. For plan of study, *vide* page 385.

An officer must have served at least three years with his corps with distinction before he can be admitted, and officers who have served longer will, as a rule, be preferred.

The Course for Military Frontier Instruction.

This is an academy for those who are already serving in the army. The course is of two years, and the number of pupils is regulated by the demand. The studies are as follows:—

State organization and frontier administration.
Civil and military law and legal procedure.
Agriculture, law of commerce, and exchange.
Revenue law and institutions.
Croatian language.

The Central Cavalry School at Vienna.

The object of this establishment is to prepare distinguished regimental officers for the higher commands in cavalry, and to instruct them in the theory and practice of that arm, and the *haute école* of riding.

There are 41 students of the rank of captain (1st and 2nd class), or one from each cavalry regiment. The course is of one year. The studies are as follows:—Theoretical and practical riding, training of unbroken horses, service and drill regulations of cavalry, veterinary art, leaping, fencing, pistol-shooting, rudiments of strategy and history of war, tactics, field service, occupation of ground, surveying, army organization, knowledge of arms, pioneer and engineer service, practical drill, and field service and reconnaissances.

The Josephinum Academy for Medicine and Surgery,

for the formation of students for the higher grades of the medical and surgical departments, from the rank of first lieutenant-surgeon.

This establishment ranks with the upper school of surgery at Vienna. The number of students from the army is fixed at 242. When there is accommodation there are, besides this, paying students.

The Military Veterinary Institution,

consisting of two sections:—

(1.) Veterinary. (2.) Farriery.

* Further information regarding the Austrian staff is given in a later despatch from Colonel Crealock at page 385.

Students who have passed the necessary examinations are entitled to their diploma and rights in the same way as students of the civil veterinary school in Hungary.

The students of the veterinary section are field surgeons and farriers.

The students of the farriery section are non-commissioned officers and soldiers and civilians. The number of soldier students depends upon the requirements of the army.

The Course for the Intendance.

This establishment, *when organized,* is intended to qualify captains or first lieutenants on the active establishment of infantry or cavalry, captain auditors, and properly qualified clerks, for the administration of the Intendance of the army now in progress of formation.

H. Hope Crealock, Colonel,
Military Agent, Vienna.

MEMORANDUM ON THE PROPOSED RE-ORGANIZATION OF THE AUSTRIAN MILITARY SCHOOLS.

From Information supplied by Baron Kuhn, Austrian War Minister.

October, 1868.

1. An officer who is a candidate for admission to the War School (Staff College) must have served with his regiment at least three years with distinction.

2. In order to have a good selection of officers, and good material for the general staff of the army, the number of students at the War School will be increased, and the senior candidates up to a captain's rank will be preferred to the junior.

3. The admission of officers as volunteer students is permitted, even though they only attend certain lectures for the purpose of qualifying as teachers.

4. Before admission to the War School it will be necessary for a candidate to pass the following examination :—

(*a*) Mathematics, including spherical trigonometry.
(*b*) Geography and history.
(*c*) Construction of arms.
(*d*) Fortification, field and permanent.
(*e*) Pioneer service.
(*f*) Drill and manœuvre regulations.
(*g*) Field service.
(*h*) Surveying.

(*i*) Military style.
(*k*) French language.
(*l*) A knowledge of one of the dialects spoken in Austria besides German.

At this examination candidates will be required to show a more perfect knowledge than hitherto of surveying, of the theory of mapping, and of the French language.

The new sciences in which candidates are to be examined in future are, mechanics, natural philosophy, and chemistry.

5. The sciences which are to be taught in accordance with the annexed list are to be arranged as follows, instead of as heretofore, viz.:—Military geography in the first year; lectures on the latest improvements in ordnance and on the technical departments in the second year.

6. The sciences which are to be now introduced are:—
(*a*) The principles of state international law.
(*b*) The principles of national economy and administration; these will be lectured on during the second year.

SCHEME of EDUCATION to be pursued at the WAR SCHOOL.

Series.	Names of Sciences.	Course of Lectures during	
		1st Year.	2nd Year.
1	German Literature	1	1
2	French Language	1	1
3	The Administrative Duties of the General Staff	1	—
4	The Active Duties of the General Staff	—	1
5	Athletic Games and Surveying	1	1
6	Military Geography	—	1
7	Higher Tactics	1	—
8	Strategy	—	1
9	Technical Sciences	1	—
10	Gunnery	—	1
11	Riding	—	1

7. The final examination at the close of the second year will be regulated in the following manner:—Professors of the college will draw up schemes of questions which they propose to ask the students bearing on their respective sciences; the members of the select committee nominated to conduct the examination will then choose out of the scheme of questions those which the professors are to ask.

8. According to the result of these final examinations, the candidates will be classed as follows:—
(*a*) Those who are fitted for the general staff.
(*b*) Those who are less efficient, but who by their general conduct deserve to be promoted out of their turn.

9. Those officers of the artillery and engineers who have attended the lectures of their superior technical schools for the purpose of being promoted direct as captains to the general staff, have to pass a special examination in such sciences as are lectured on in the War School, but are not taught in the superior technical school of their respective branch of the service.

10. The sciences according to the annexed form will be taught in the Upper Artillery School:—

(*a*) National economy. State finance.
(*b*) Organization of the constitution, and administration.
(*c*) State and international law.
(*d*) German literature.
(*e*) English language.

11. The course for the Upper Engineer School is extended to two years, and it will be transferred to Vienna.

The new sciences not contained in the old programme, which are to be taught in future, are as follows:—

(*a*) German language, (*b*) French language, (*c*) English language, (*d*) National economy and general science of finance, (*e*) Organization of the constitution, and administration, (*f*) State and international law, (*g*) Railways [specified], (*h*) Military architecture, (*i*) History of architecture, (*k*) Military geography, (*l*) Higher tactics, (*m*) Landscape drawing and perspective.

12. The candidates for admission to the superior technical schools must have served with distinction for at least two years with their regiments as officers.

13. The final decisive examination at the close of the lectures in the upper schools for artillery and engineers will be conducted by a commission of professors before a special committee of the Imperial War Ministry.

SCHEME of EDUCATION for the HIGHER ARTILLERY COURSE.

Series.	Names of Sciences.	Course of Lectures during	
		1st Year.	2nd Year.
1	French Language - - - - - -	1	1
2	Practical Mechanics - - - - - -	1	—
3	Construction of Machinery - - - - -	1	—
4	Armament of Fortifications and Siege Operations -	—	1
5	Higher Artillery - - - - - -	1	—
6	Military Geography and Statistics - - -	1	—
7	Higher Tactics and Strategy - - -	—	1
8	The Active Duties of the General Staff - -	—	1

SCHEME of EDUCATION for the HIGHER COURSE at the ENGINEER ACADEMY.

Series.	Names of Sciences.	One Year's Course.
1	Technical Chemistry	1
2	Technical Architecture	1
3	Fortification	1
4	Architecture	1
5	Decorative Building	1
6	History of War	1
7	Science of Artillery	1
8	Strategy and Tactics	1

14. Such students of these upper schools as do not evince sufficient talent in the course of the three first months will be remanded to their regiments.

15. As a rule, candidates for admission to the military schools will only be accepted after 15 years of age. Under certain circumstances—viz., in the case of orphans, candidates for a place in a military school, or boys whose parents are too poor to give them a proper education—a school may be continued with one superintendent, masters, and necessary underlings. The boys at such an establishment will be instructed at the public schools of the place where the institution exists, and will eventually be generally admitted to the military schools according to their age and ability.

16. Boys who, in accordance with former regulations, had a claim to be received in a military institution for the education of youth gratis, will receive a certain military stipend until such time as they have reached a proper age to enter a school company or academy.

17. In addition, for all those boys who now have a right to a free place in the cadet school, a preparatory school will be continued for 200 boys; the course will extend over two years.

18. The following existing military schools will be successively abolished, viz.:—2 lower, 5 upper schools for education; 2 infantry school companies; 2 cadet schools; and the institution for military teachers at Wiener Neustadt.

19. The academy at Wiener Neustadt will generally remain in its present state and constitution, and receive its scholars from military stipendiaries, but chiefly from the above-named educational establishments. The latter, before they can enter, must have passed through a lower classical or technical school (*Unter-Gymnasium* or *Unter-Real Schule*), to enable them to be fitted for the higher Latin course which forms part of the programme of Wiener Neustadt Academy.

20. To enter *direct* into the Wiener Neustadt Academy, students must have passed a two years' course in one of the higher classical schools (*Gymnasien*).

21. By this arrangement, the Wiener Neustadt Academy is adapted for purposes of general education, and by instructing the scholars in statesmanship, &c., will fit them for any situation in life.

22. The artillery and engineer academies will be united and form one and the same institution, and will be fixed at Vienna. The supreme direction of it will alternate between officers of artillery and engineers. This academy will receive students from the preparatory schools, and from the technical military schools and stipendiaries. The course of study extends over four years. The students of the two first years will have their lectures combined, but those of the two last years will be separate. There will be 80 scholars a year; therefore the whole establishment is planned for 320 students.

23. Candidates are required to have successfully passed the higher technical schools before they can enter the academy.

24. Young men may enter these academies and take a higher course than that laid down for the first year, if on examination they are found to be fitted for it; stipendiary scholars will also be received, or young men who have already been drawn for the army; but all who enter must pass the necessary examination first.

25. The programme of the technical military schools (formerly artillery and pioneer company schools) is equivalent to that of a higher civil technical school (*Ober-Real-Schule*); therefore those who wish to enter them must have first passed through a lower civil technical school (*Unter-Real-Schule*).

The most distinguished scholars of these technical schools will enter, after they have passed the third year, into the technical academy. The others may enter the second year's course of the division school, or the first year of the school for artillery cadets (officers aspirant).

26. The students of the technical military schools, when they enter the army, will be allowed to select either the "Artillery" or "Engineers" according to the vacancies in those corps.

27. To avoid inconvenience, it is proposed to give the rank of officer aspirant to all those students who, in consequence of having distinguished themselves, enter the army by way of the Military Academy, and to date their rank from the 1st of October of the year they enter, and to give

them precedence over all such other students who may have entered the army direct from the technical schools through the division schools, and who might otherwise gain their rank sooner. When the first-named scholars enter the army from the academy, their relative rank as officers aspirant will be regulated among each other according to their individual merit, and they will enter their respective branch of the service with this rank, and above all other officers aspirant of their date. Scholars who leave the academy before the close of the course lose their claim to enter their corps with the rank of officer aspirant; but all students who, in consequence of superior attainments, entered the academy and took a higher course than that of the first year's, have the same right as the others as regards entering the army with the rank of officers aspirant.

28. Scholars sent away from the military schools on account of bad conduct, and who by the new recruiting law are ineligible for enrolment in consequence of age, will receive the position, &c. of a private soldier, and will be employed as copyists in the division schools until they are old enough to enter the army.

29. The provision by which students of the two academies, who are physically unfitted to enter the army on account of bad health, receive a pension of 150 florins per annum until they are recovered, or have found other employment, is proposed to be continued.

30. It is necessary for a candidate who aspires to a military stipend to be qualified, as regards age and merits, in the same way as has hitherto given a right to obtain a free appointment to a lower or higher gymnasium or cadet school. The stipend is granted, as a rule, for four years. During this period the stipendiary must, to enter the preparatory military institutions, study at a lower gymnasium; to enter the Military Technical School, study first in a lower technical school; and to enter direct into the academy, he must study at a higher technical school or a higher gymnasium for two years.

31. There are two kinds of stipends—*full stipends* and *half stipends*. They are divided into three classes, viz. :—

150 florins and 75 florins as compensation for an education in a lower military school (*Unter-Erziehungs-Hausplatz*).

170 florins and 85 florins for an education in a higher military school (*Ober-Erziehungs-Hausplatz*).

300 florins and 150 florins in lieu of a free appointment to a cadet school.

These last half stipends of 150 florins in lieu of a cadet school appointment may be increased or reduced by 50 florins according to circumstances.

32. The stipends are paid half-yearly in advance on presenting the certificates of the school where the stipendiary is, and the certificate of the surgeon as to his probable fitness for military service.

Stipendiaries desirous of entering the military technical schools or academies must know German.

33. When the certificates of a stipendiary are not good, he is allowed half a year to mend his ways, before the loss of his stipend is decided upon. In the case of sickness he may be allowed a year's rest.

34. Sergeant inspectors in use in the former scholastic establishments are abolished, and schoolmasters will be appointed in their place for the lower schools. These men must have studied their business at a civil teachers' school. At the higher military institutions subaltern officers who are out of active service, and who are duly qualified, will perform the duties of schoolmasters. Such officers must pass a certain examination before they can be appointed schoolmasters, and when admitted they rank as military officers.

35. Officers who aspire to become professors must pass an examination, unless they can show a written certificate that they have already successfully passed a State examination, except the following—instructors in the army regulations, drill, writing, or athletic exercises.

36. Every officer who aspires to the post of a professor must not only be duly qualified to lecture on the subject or science which it is his special duty to teach, but he must be also competent to lecture on a second subject at least, in order to supply a vacancy should one occur.

37. Regarding the employment of civilians as professors, the former regulations remain in force.

38. As regards the remuneration of officers, their equals in rank, and other military officials, who may be employed as teachers in the military schools, it is proposed that all such shall continue to receive the extra pay which has been given hitherto; and that besides this they shall count 18 months service for every year they serve in such an employment, even in cases where they return to regimental service. Officers employed in instructing students in a science will, when they have been so employed for five years, receive an extra pay of eight florins a month, or 96 florins a year.

39. The four military technical schools, which are intended principally for the supply of the artillery, will be reduced to two, but without reducing the number of their students.

40. The abolition of the cadet schools will be carried into effect as follows:—beginning from this year no aspirants are admitted to their first year. By this plan one cadet school will cease to exist this year.

41. Further, two infantry school companies will be closed at the end of this school year, and the students leaving in the first year of their course will be disposed of according to their qualifications, and placed either in the military technical schools or higher gymnasia (the last are organized on a principle similar to that of the infantry school companies); those in their second year will enter the army. The teachers' school at Wiener Neustadt, being no longer required, will be abolished also at the close of the school year.

42. As regards the scientific instruction of the students, it must be kept in view that the scheme of education for the military schools has to be arranged in such a way that it shall be the same as that laid down for the civil schools of equal rank, in order that the scholars may be able to pass the necessary State examination. The French language will be taught in the military technical schools, as in the civil schools. A scholar has to receive the same instruction during his four years study at the Technical Military Academy, as a student at the Polytechnic at Vienna.

43. Professors will give a written certificate as regards the qualifications of each student at the end of every three months, but they may examine their scholars, particularly the deficient ones, if they choose, every month.

44. The committee has also proposed the formation of a board for the discipline, and of a board of professors at each school.

45. The change from the old to the new system will be effected thus:—as regards those students who have already commenced their course at the military schools the old plan will be followed, and only such new subjects of education will be added, as the previous preparation of the students will admit of their taking up; but the entire new scheme will be brought into operation when the scholars enter next year.

H. Hope Crealock, Colonel,
Military Agent, Vienna.

TRANSLATIONS OF AUSTRIAN OFFICIAL DOCUMENTS.

(A.)—Translation of a Pamphlet by the Minister of War on the necessity of re-organizing the Educational System in the Imperial Army.

The real object of the improvement of human nature by means of cultivation and education is to raise humanity to the highest point of perfection possible—and the general diffusion of knowledge; such objects can only be attained by the harmonious development of those intellectual and moral gifts which the Creator has planted in man. Every one-sided development of those germs, every favouring of one at the expense of the others, works contrary to the scale of nature's laws, and the one either undermines the peculiarity of the individual and creates a monster, or forces it as in a hothouse and, as a result, produces "specialities," but never a real specimen of "perfectly balanced humanity." It must be the same when the national economical and social system tries to attain a departmental special education; an effort, at least, should be made in special education of this kind that the general principles of humanity should form the basis of it, and the effects of broad views should to a certain extent be inculcated.

It is agreed that the first object in education is to develop as much as possible the moral character of man. It is also evident that the first thing which has to be attended to, to obtain the above object, is the strengthening of the moral sense, the regulation and improvement of the mind, and the perfecting of the religious sentiments. This should be done at the tenderest age, and can be the more readily carried out in the family circle; when this is not possible, so surely the partial development of the moral germ can be traced, even though the other points of the character, such as force of character, decision, and self-reliance, may have been fully developed.

In those states in which the power of the commonwealth reached to so high a pitch that the majority of the youth of the state had to serve the government, the boys were often taken from their family at a tender age and instructed at the expense of the state; this was the case at Sparta; but this system fell to the ground in the states of Christianity, especially in consequence of the more modern notions on government.

The code of Lycurgus clearly proved that such a system of education violently crushed all the tender pure feelings of

human nature, and without their development true education can never take root; consequently this code ceased to exist, because it was founded on only a partial and one-sided development of the human character and its qualities; in other words, it was unnatural, and came to be superseded by the code of Solon.

It is clear that it is the duty of the parents and family to care for the education of youth; it only becomes the duty of the state to interfere when the family is unable or neglects to perform it. Under such circumstances it becomes the task of the government to educate the child by means of its schools, as the children are often taken from their families at the tenderest age.

It is a capital fault in our present system of education that our popular schools do not pay sufficient attention to the development of the moral gifts. The evil effects of this can only be counteracted by a sound prosperous self-government, as has been so admirably shown in Gustave Frölich's treatise.

But the effects of this *special training* are particularly dangerous when a child is very young, when an effort is made to form a member of some particular profession or calling, rather than to form a man. This, we regret to say, has been the general system in our lower military schools.

This defect, so common to all our public schools, we found in our military ones was more strongly marked, on account of the scarcity of practical and experienced instructors, and the separation of the scholars from their families and the outer world. But although we hold that at a tender age the first base of our moral character is to be fixed and developed, still it is to be clearly understood that at the same time full attention should be paid to the "mental development;" for it is at that period of our life that the first spark of the intellectual fire is to be kindled and blown into a flame. Love of truth, the understanding of the meaning and object of intellectual formation, the sharpening of the memory, cannot be awakened too early; but this should only be done to such an extent as to be in harmony with the mental development. It is exactly at this point that it is so important to ascertain the proper amount of instruction to impart: otherwise the spirit is broken and stupified by over work, zeal and a desire to learn will be changed into disgust, and superficial knowledge will alone assert itself.

The Development of the Mental Faculties, the Judgment, &c.

Special attention to the development of the mental faculties should not be paid until the student has reached the

middle schools. Here, before all others, the following questions should be answered: How and by what means can the mental faculties of man, the understanding and reason, be sharpened and improved?

Method of Development.

This formation and sharpening can be effected by two ways: either by a course of philosophy or mathematics. It is only by taking into consideration the individual to be formed, that we can truly discover which of these two courses should be followed; and it may often happen that the best system will be an application of both methods, so as to produce a harmonious development of the character and mind.

Philosophy is the science of an abstract idea, which cannot be explained or laid down absolutely, but which the intellect must seize and arrive at by a course of reasoning.

Mathematics, on the contrary, has to do with *demonstration*, and can be proved by the evidence of figures.

Both require the scholar to be carefully prepared; but from the above remarks it may be deduced that the human intellect may come to reason with greater freedom, and often more profoundly, by being formed in a course of philosophy; while mathematics sharpen the intellect and make its nature more logical.

It is not possible for us to deviate from the path of logic if we reason a thing out by means of philosophy, but such a logical error is possible if worked by mathematics only, though only to a certain degree, as the result of our calculations will eventually prove the error.

On the other hand, it may be urged against the mathemathical system that it gives the intellect a partial or special formation, as it is bound by rules, forms, and figures, and sometimes finds it difficult to shake them off.

Experience shows us, therefore, in both of *these special educations* the remarkable effects of these theories of philosophers. The history of German philosophy sufficiently shows this, and that of excellent mathemathicians, who in practical life are worth nothing, because they cannot leave their angles and figures in thinking or acting. All this goes to prove that special or partial instruction leads only to a one-sided education, and that a satisfactory result can only be obtained by a union of both systems or a harmonious development of the mental faculties. If this be true—and it can hardly be questioned—and if we do but employ our experience in a

practical way in the government schools, and found them on sound principles, we shall so arrange the system of education that both manners of instruction will be applied.

The boy may then in after life follow the calling for which he is most fitted; but in all cases the above remarks, as regards his intellectual formation, will be found to be true; and the reason of this is, that, above all things, education should try to form a man as such, and not a member of some special trade or calling; and because a sound and general education has come to be a necessity in our modern state of existence. A youth, to be formed and educated as he ought, should be brought up as above described till his sixteenth year, and then the realistic philosophical system should be applied.

The above-mentioned opinions led to the formation of the Gymnasia (*Real-Gymnasien*, mixed classical and technical schools), which have been so generally approved of; and it is only to be regretted that there are so few of them, and that they are only used as schools for the young, while it is a fact that they might be used for the purposes of philosophical study with great advantage. It is only when a boy has gone through a course of realistic philosophical study that he should be called upon to decide on the choice of his career, for he will then have fitted himself to follow any.

According to our present system a youth of nine or ten years has to decide on the calling he will follow as a man, and according to his or his parents' decision he pursues a philosophical or technical course of education. If a boy at a more mature age feels that he is not qualified for the career chosen for him by his parents, when he comes to this conviction he loses much time by having to change the whole course of his study, and if he finds that it is too late to change, his tranquillity is lost.

It is necessary that the school books should be carefully revised; at present our school books are loaded with chaff, which burdens the memory too much, and is blown away by the first wind after we leave school. This is especially the case with our mathematical books, which are so filled with principles and axioms that the scholar is wearied with this useful and necessary study, and his memory loses, with the secondary, also the leading principles of the science. If we only confined ourselves to the principal axioms, and showed their application by examples taken from life, then they would soon be firmly rooted, and become of some practical use. The study of geography, likewise, is not now a practical one, for it is not taught in schools in such a way that the

memory of the scholar is impressed with the conformation of the different parts of the world, which is the best manner of fixing it in his mind.

Instead of loading the memory with a number of superfluous dates—for instance, the list of notables of a city, the libraries and the books of interest in them, the principal buildings, &c.—it would be much better to instruct the scholar how to draw *by heart* on a board the form of a country, and in it to show the rivers, mountains, and towns of statistical importance, and the important high roads and railways. As regards history, it is now become so bulky that a special and detailed knowledge of it is the work of a lifetime; therefore only a short sketch or *résumé*, beginning at the earliest periods and ending with the present days, can be given; and only such events as will by their example lead the heart to admire the noble and truly great, need be fully described and illustrated. For instance, the history of Greece and Rome may be selected from the history of the former days; while of the more modern, the Reformation, the Thirty Years' War, the Seven Years' War, the history of the French Revolution, and the latest events of modern time; the middle ages, the crusades, and the other events of those periods need only be slightly described, and only that part which contains the history of the German emperors need be gone into *in extenso*. Great weight ought to be laid on the moral history of man, which important history has unfortunately till now been treated as quite a secondary matter in our schools. But there is no greater failing in our present system of education than the neglect of the study of *statecraft*. As philosophy and mathematics will lead to the harmonious development of every thinking man, so will also every citizen learn to manage his own business properly by being taught the natural and acknowledged principles of economy; without acting on the principles of economy, logic and the causal nexus, it is just as impossible to arrive at an independent or intelligent resolution or act, as for a person, a family, a community, or even a whole nation, to arrange their affairs on a truly economical system without a knowledge of the science. It will be objected that a large number of people who know nothing of the science of national economy yet manage their affairs very well; but to this we answer that such persons arrive at the desired result without knowing it, just as we find a great number of men who think perfectly logically, without ever having studied it as a science, and who probably even do not know it by *name*. But notwithstanding this, no one will dispute the propriety of extending the study of logic as much as possible.

Certain principles should be first taught in the lower schools, in order that the boys should understand economy and the proper application of means. The same system should be followed out in the upper schools.

It is only by such a course that the population of our empire can be taught providence, and that the inclination to squander—which, in Austria especially, is so often imbibed with mother's milk—can be abolished. Our neglecting the study of national economy has been the principal cause of our financial calamities; the inexhaustible riches of Austria are often referred to, and the request at last made to develope all her resources; but when we look round the provinces we find that there is no one who can develope them, and in general there are very few who understand anything about them.

Military men are generally ignorant of the science of "*economy;*" few know it even by name, notwithstanding that a knowledge of its pripciples is necessary for their profession; for a sound administration can never be arrived at without the application of its principles.

There is another matter in which we are very ignorant—viz., the institutions of the state, while every instructed citizen ought to possess at least a concise knowledge of the fundamental laws of his country. Every Englishman knows the fundamental laws of England, and is proud of them; this must be the same with us, for it is only by such means that true patriotism and esteem for the law can be produced.

With this sketch of the improvements proposed in our schools, these remarks may be closed, and only a few hints added below to show how they may best be adapted.

Application of the above-mentioned Principles of Education to our Military Schools.

The military schools are divided into two classes, viz.:—

(1.) Those which give a boy a general education, but prepare him at the same time for the military profession.

(2.) Those which educate boys only in military matters.

In the first class may be included (*a*) all those lower class institutions in which military orphans and sons of poor non-commissioned officers and commissioned officers are educated; (*b*) the middle (cadet) schools which prepare students for the military academies; (*c*) the military academies, viz., *Wiener Neustadt,* and the engineer and artillery academies.

As pure military schools, may be mentioned the schools for non-commissioned officers in the infantry, engineer, artillery, and pioneer corps; the cadet and division schools in the infantry; the higher artillery and engineer courses.

(*a.*) The lower schools for the education of military orphans of a tender age have the same system as the common schools of the like class (*Normal* or *Volks Schulen*), where the moral qualities are to be chiefly inculcated on Christian principles; it is therefore necessary that children should not be taken from family influences earlier than can be helped. It will therefore only be necessary to take into these schools such children as are orphans, or sons of penniless parents, or at all events those whose families cannot be induced to educate them at home even by pecuniary assistance. One school would be enough for such boys, in which the moral education would be the first object, as the necessary education required to prepare the scholars for the higher schools and regimental cadet schools may be obtained by their attending the public schools.

(*b.*) As regards the middle cadet schools, they should be abolished, as they do not agree at all with the above-mentioned principles. Boys are torn from home at much too tender an age, and are not brought up in the path of morality. Should a reform only of these schools be intended, this would be so expensive that the improvement gained would be dearly paid for.

As the army is not only to be composed of drilled soldiers, but also of generally well educated men, in order to improve their intellectual position and the spirit of the army, and to prevent the undue growth of drill and mere formalities, it is of great necessity that the military schools should be brought into harmonious concert with the civil schools. The deficiencies of the latter are less than those of the former, and it may be expected that they will soon be removed. In accordance with these considerations (and there are yet many more), it is much to be recommended that these two institutions should be abolished, not only as being right in principle, but also in agreement with the laws of national economy.

By the laying down of the system of education to be taught at the common middle schools, as a condition of being allowed to enter a military academy, in connexion with the influences of the moral development of the family circle, up to the fifteenth year of a boy's life, it is to be hoped that the general above-named principles will be attained; and when the poor officers are allowed the means to educate their boys

aspiring for the military academies by granting them pecuniary allowances, it may be hoped that they will not only be contented, and will care for the moral education of their children, but that the State also will find in the system the best means of attaining its object.

As regards the higher schools, especially military ones, the following may be observed :—

There are two establishments at present :

(*a.*) The Military Academy and Wiener Neustadt for general education.

(*b.*) The Engineer Academy, as a special school for the engineers, and for the instruction of officers in general.

The latter of the two is not efficient enough, for not more than eight or ten persons at most are instructed as engineers in it, the rest being detailed for the infantry, cavalry, &c. As by the establishment and organization of division schools a sufficient supply of officers aspirant is provided, and as the officers detailed from the above-named academies to the line are not more efficient than the scholars of the division schools (especially when the extra cost of the academy education is considered), the Enginer Academy must be looked upon as much too expensive. I agree, therefore, with those who recommend its abolition. On the other hand, the Neustadt Academy, which offers to its students a more general, and therefore a better founded education, and where highly instructed officers can be educated in larger numbers, may be allowed to remain, both in consideration of its efficiency and in honour of its serene foundress, the great Empress Maria Theresa, but on condition of its being reorganized in accordance with the principles laid down by that noble lady in the following words :—" That in this school shall be formed *men* only, and of them *soldiers*."

The said academy must, however, seek to attain to a higher degree of perfection than of late. The classics must be more cultivated, as also national economy and a general civilized education. It should be organized for a course of six years, and it should receive students, sons of officers or military officials, who have successfully passed two or three Latin or technical schools.

The following subjects should be taught, besides the military and mathematical sciences :—

(1.) The Latin language, sufficient to understand the Roman classics.

(2.) All human sciences; particular attention should be paid to style, as it has been observed that since Latin has not been taught in the Wiener Neustadt Academy, there has been a great falling off in this respect. Rhetoric is to be taught in a practical manner, as the knowledge of how to speak is of importance in our constitutional era.

(3.) Philosophy, two years; in the first year, psychology; in the second year, logic to its full extent, moral philosophy, metaphysics, and the history of philosophy.

(4.) Statecraft, state and international law, and the fundamental law of the Austrian monarchy.

(5.) The rudiments of economy and national economy.

As special schools for the army the following should be retained:—

(*a.*) A special engineer and artillery school.

(*b.*) A special school for the pioneer corps, where the special knowledge necessary for that arm, as well as other military matters, are taught. The scholars should be between the ages of 16 and 19 years.

The students of the institutions intended for the education of the engineers and artillery will be enrolled in their respective corps quartered in Vienna. They will there have to pass a proper course of high mathematics, natural philosophy, and architecture at the Polytechnic; after they have succeeded in this, they will be either detailed for two years' active duty with their corps, or they may be at once ordered to pass through a higher combined course for artillery and engineers. If this will suffice for the due supply of technically instructed officers, the artillery and engineer academies may be abolished.

As regards the present school for the General Staff, it may be recommended that a general college for the whole army should be formed from it, wherein not only the higher military sciences should be taught, but also statecraft and national economy. It would be right to examine a candidate before he entered the college in the rudiments of natural philosophy and chemistry.

The student may obtain the time necessary for the cultivation of these two sciences by reducing the time till now assigned to sketching and surveying; the more so, as the

student will have already attained a great perfection in this branch of his education by former study of it.

It will require time to introduce the whole of this new system; and as there can be no doubt of its being founded on sound rational principles, there can be no question of its success, which will show itself in a superior education of youth and a comparative saving in the public expenses.

H. Hope Crealock, Colonel,
Military Agent, Vienna.

(B.)—Translation of a Memorandum by General Kuhn, Austrian Minister of War, on the Reorganization of the Military Schools of the Empire.

October 1868.

It is a just and well founded complaint that our military schools are not equal to the times in which we live. The instruction in these schools is too exclusive and special, and the boy is instructed for the profession of arms for seven or eight years, to the exclusion of his general education as a man. In this system of special military education a boy passes the best years of his life for gaining knowledge, viz., till his eighteenth or nineteenth years, and—if he adds to this his course at the War School—till his twenty-fourth or twenty-fifth year. All this time he is but learning the special knowledge applicable to the military profession, so that if circumstances cause him to leave it, he is hardly fitted to earn his bread in any other way. As a rule he has not learnt a good style of writing and composition, the cause being that the military student does not receive a classical education, but a purely technical one. It can be seen how totally this classical education has been lost sight of by looking at the usual style of our general orders, publications, &c.; there is no trace left of that style used by our ancestors in their service regulations. It comes therefore to be a necessity, if we wish to improve the intellectual state of our army, and to have not only men well drilled as soldiers, but also well educated men in it, to establish a proper connexion between our civil and military schools. To this end it will be necessary to leave the education of youth till 14 or 15 years old to parents, and to the civil schools and gymnasia, and to begin the special professional education after that period; and even then in accord-

ance with the enlightened spirit of the age. I have therefore come to the decision, partly on account of expense, and principally on account of the necessity of enlightened education, to abolish all those military schools for boys of tender age, and that all institutions for the instruction of youth in military matters shall be better adapted for the objects in view.

The following lower schools will therefore be abolished:

1. All lower military schools.
2. All higher ditto.
3. The cadet schools.

Experience has shown in regiments that those who have passed through the infantry schools in general know very little, and are in consequence mostly transferred to the regimental cadet schools. This proves that it is not necessary to retain the infantry schools, if the regimental and divisional cadet schools are properly reorganized.

The two infantry school companies are therefore abolished. By this arrangement teachers are no longer required for these schools, and the college for their education is therefore also abolished.

But for the special instruction of the artillery and engineers there are established four artillery schools, two engineer schools, and one pioneer school; and the necessary special education of their various branches, as well as the other military sciences, will be imparted to the students in a three years' course, *i.e.*, from the fourteenth to the sixteenth year of age. As soon as a scholar has passed through the school of the branch to which he belongs, he is attached to his regiment at Vienna, and will attend the lectures on mathematics and natural philosophy at the Polytechnic Institution there. This course extends over two years, viz. the seventeenth and eighteenth years. When this is finished the young men will be detailed for duty for two years with their corps, or will be sent at once to the higher academy for artillery or engineers, which course lasts for two years more.

The instruction of infantry officers is to be imparted principally at the regimental cadet or divisional schools, and they will be organized according to the plan of the school now existing in the 8th infantry division. By this arrangement the army can be provided annually with nearly 600 officers aspirant, which will be sufficient to fill the vacancies.

Soldiers' children who may have received an allowance for their education will be the principal source from which these schools will obtain their students.

The academy of Wiener Neustadt will be continued, but it must be reorganized and put on a better footing, and the course of instruction improved. The course at this academy will extend over six years. Officers' sons and others who have passed two years at a gymnasium will be admitted.

In this academy there will be lectures given not only on military and mathematical sciences, but also on the Latin language, so far as a student may require to understand the ancient classics, and on the various sciences. Great attention will be paid to a good style of writing, for up to the present time the students both at this college as well as at the War School have been very deficient in this respect. Rhetoric will also be taught, for the power of speaking well is of much consequence on many accounts in these our constitutional days.

Philosophy.—Period of study one year.

Psychology.—Period of study two years, comprising logic and moral philosophy. Metaphysics will only be shortly treated.

Statesmanship.

State and international law, and a knowledge of the constitution.

National philosophy.—This study is of importance to enable a young man to appreciate the principles of national economy and the management of property.

The books now in use at these schools are to be examined, and the number to be reduced as much as possible.

H. Hope Crealock, Colonel,
Military Agent, Vienna.

(C.)—Translation of Circular Order No. 130 of 19th August 1868.

With reference to the imperial decree of 13th August 1868, wherein His Majesty has been graciously pleased to approve of further reforms in the organization of the military schools, the following circular is herewith published, as a preliminary to the special instructions which will be announced later.

(1.) From the beginning of the next school season the following schools are to be abolished, viz.:—

The lower school at Weiss Kirchen, at the Banat in Hungary.

The two infantry school companies at Olmütz and Hainburg.

The cadet school at Hainburg, and the establishment at Wiener Neustadt for military teachers.

(2.) From the beginning of the next school term there will be no admissions for any candidates wishing to enter the lowest class of military schools from private institutions, except the school companies and military academies, but such candidates may be appointed to the higher classes of the schools above referred to, their admission being granted with reference to the numbers which can be admitted for one year's course, and provided they possess the necessary qualifications in other respects. To prove this they will, before being admitted, have to pass a careful examination.

(3.) It is left to the option of those whose sons or pupils have the advantage of a free nomination to a military school to make a direct application to the Minister of War, as soon as they have received the free nomination, in the name of the said boy, for a "military stipend," paying careful attention to the following, "that this is only necessary when parents "or others prefer the stipend to the education of the boy at "a military institution." But it must be here pointed out that no application for a stipend in lieu of a free nomination can be entertained after the boy for whom it is solicited has broken down in his examination for admission to any military institution, as in such cases the candidates will under no circumstances be admitted into any institution, but must wait for the next year.

In general the following rules will be observed for the admission of candidates into military schools, or for the granting of military stipends:—

(4.) Boys will in future only be granted admission to military institutions at a more mature age, and more highly educated than heretofore. All aspirants will have to be qualified as follows before they can enter:—

(5.) Those aspirants who till now had a right to a free nomination in a military orphan school according to rules will retain their right, and for the purposes of acquiring the necessary qualifications to enter such an institution will either receive a military stipend or be admitted without one to a preparatory military establishment, if the place admits of it. The grant of a military stipend, and the grant of a place in a military orphan school go together, and the favour of such appointments will be regulated as hitherto. Orphan scholars who pay for their places will also be permitted in future.

(6.) The military stipends are divided, according to the categories of the various existing institutions, into stipends

for upper and lower schools, and cadet schools; and such stipends may be either full or half ones.

Their value is as follows:—

	Florins.
A full stipend for a lower school - -	150
A half do. do. - -	75
A full stipend for an upper school - -	170
A half do. do. - -	85
A full stipend for a cadet school - -	300
A half do. do. - -	150

The last-named may be increased or decreased by 50 florins, according to circumstances and the means of the family of the candidate, and according to his conduct.

(7.) The granting of a military stipend is in the power of the War Minister, and is bestowed for half a year. The amount is payable in advance. The individual who has received a stipend must bring the receipt, signed by the parent, and the certificates of the last term which he passed at school; and at the period when the second half-yearly stipend is paid, a certificate showing the physical state of the boy, signed by a military surgeon, must also be brought. If the certificate of the lad is not good enough, he is allowed half a year's grace to improve before he loses his stipend, and in case of sickness a still longer period will be allowed. The schools where the military stipendiaries have to be educated will be intimated to their parents.

(8.) In order to obtain a military stipend it is necessary to have the following qualifications besides the valid claim of a candidate for such a favour, and his being duly qualified as regards his certificates, &c.:—

(*a.*) To obtain a stipend for a lower school, the age of the boy must be between 7 and 10 years, and he must attend a grammar school according to his age (*Normal-Haupt-Schul-Classe*).

(*b.*) For a stipend in lieu of a place at a higher school, his age must be between 11 and 14, and he must attend a middle-class school of inferior order (*Unter-Real-Classe*).

(*c.*) For a stipend in lieu of a place at a cadet school, he must be between 12 and 15 years, and he must attend an upper or lower middle-class school (*Real-unter oder ober-Gymnasium*), according to his age, if he wishes hereafter to enter the academy at Wiener Neustadt or the artillery or engineer academy.

The military stipendiaries of the above classes (*a*) and (*b*) acquire the right to enter the technical school about to be formed; those of class (*c*) the right to enter the military academies; but those of the first classes must at least have passed through a lower middle-class school (*Unter-Real-Schule*), and those of the lower at least the second class of an upper gymnasium, and must pass a satisfactory examination before they can be admitted. As soon as a stipendiary is admitted into a military institution his stipend ceases. Military stipendiaries preparing themselves to enter a military technical school or academy direct must know the German language, and must produce a testimonial to prove this, signed by a competent military authority; for his classification on this head in the school testimonial only shows his progress in the language at school.

(9.) All candidates, whether stipendiaries or otherwise, who aspire to enter the military schools must of necessity possess the same qualifications, and must have passed the same preparatory studies as have been required of military stipendiaries until now—with the exception that candidates for the preparatory military college for the Wiener Neustadt Academy, which is about to be established, must have also passed successfully through a lower middle-class or classical school, and must pass a preliminary examination before they are admitted.

To be admitted direct into the Wiener Neustadt Academy it is necessary for a student to have passed successfully the second year's course of a higher classic school.

Candidates who have not studied at a classical school can only be admitted into an upper class of the academy when they are perfectly competent, and can pass a good examination at the academy.

To be admitted into a technical academy a student must have passed successfully an upper middle-class school, and must pass an examination before he is admitted; or he must have passed the third year's course of the preparatory military technical school; but well educated candidates will also be admitted into these academies on passing the necessary examinations, and may even be allowed to enter a higher class in the academy if they can show their fitness.

(10.) A military orphan asylum is to be erected for the special protection and education of military orphans, and other candidates who have claims for special consideration, and who would not be sufficiently cared for by means of a stipend.

(11.) His Majesty has been pleased to approve of the appointment of subaltern officers in receipt of a pension, and

who are duly qualified, as directors and teachers in the military schools. Of subaltern officers who apply for such appointments, the preference will be given to those who are qualified as teachers; but all such officers will have to prove their efficiency by passing an examination in the science which they propose to teach. In the case of such an appointment being made, the officer will be transferred from the pension to the active list, and will receive his full pay and his allowances, besides the extra pay laid down for officers acting as teachers. Officers who aspire to these situations may at once apply to the Minister of War.

(12.) His Majesty has been pleased to order that all officers must have served two years with their corps with distinction before they can be admitted into the Upper Engineer School.

(13.) Further, that officers of the Artillery and Engineers *of the rank of captain*, who have successfully passed the upper technical schools, may be appointed to the *General Staff of the army*, provided they can pass an examination in such subjects as are taught at the War School, but not at the upper technical schools.

H. Hope Crealock, Colonel,
Military Agent, Vienna.

COURSES OF STUDY IN THE MILITARY SCHOOLS.

(I.) Course of Sciences to be taught and lectured on at the Regimental Cadet Schools.

Subjects.	Course of Lectures during	
	1st Year.	2nd Year.
German Language and Style	1	1
The Regimental Dialect	1	1
Caligraphy	1	1
Military Style	1	1
Arithmetic	1	—
Algebra	—	1
Practical Surveying	1	1
Mapping and Tracing	1	1
Geography	1	1

Regimental Cadet Schools—*cont.*

Subjects.	Course of Lectures during	
	1st Year.	2nd Year.
History	1	1
Drill and Manœuvre Regulations	1	1
Service Regulations	1	1
Field Service	1	1
Pioneer Service	1	1
Construction of Arms	1	1
Hand Drawing	1	1
Fencing	1	1
Gymnastics, &c.	1	1
Target Practice	1	1

(II.) Course of Instruction at the Schools for Officers Aspirant.

A.—*Ordinary Course.*

Subjects,	Course of Lectures during	
	1st Year.	2nd Year.
Military Style	1	1
Military Essays	1	—
Geometry and Trigonometry	1	1
Higher Trigonometry and Conic Sections	—	1
Mechanics, Natural History, and Chemistry	—	1
Geometrical Drawing	1	1
Practical Surveying	1	—
Military Mapping	—	1
Sketching and Tracing	1	1
Geography	1	1
Mathematical Geography	—	1
History	1	1
Military Administration	1	1
Drill and Manœuvre Regulations	1	1
Service Regulations	1	—
Army Organization	1	1
Tactics	1	1
Field Fortification	1	—
Permanent do.	—	1
Construction of Arms	1	—
Hand Drawing	1	—
Fencing	1	1
Athletic Games	1	1
Target Practice	1	1
Riding, if possible	—	1

B.—*Course for the Pioneer Regiment.*

High Mathematics.
Higher Trigonometry.
Practical do.
Analytical Geometry.
Mathematical Geography.
Natural History and Chemistry.
Military Economy and Finance.
Geography.
History.
Construction of Arms.
Fortification.
Architecture.
Mechanics.
Pioneer Service.
Drill - } Regulations.
Service - } Regulations.
Manœuvre } Regulations.
Surveying.
Tracing.
Athletic Games.
Fencing.
Swimming.
Tactics.

(III.) Course of Instruction at the Preparatory School for the Wiener Neustadt Academy.

Subjects.	Course of Lectures during	
	1st Year.	2nd Year.
	Hours per Week.	Hours per Week.
Religious Instruction - - -	1½	1½
Latin - - - - -	7	7
Greek - - - - -	3	3
French - - - - -	4	4
German and Literature - - -	3	3
History and Geography - - -	5	5
Mathematics - - - -	5	5
Natural History - - - -	—	3
*Short-hand Writing - - - -	3	—
*Caligraphy - - - - -	2	2
*Drawing - - - - -	2	2
*Athletic Games - - - -	2	2
Dancing - - - - -	2	2
Swimming - - - - -	—	—
Total hours per week -	39½	39½

Subjects marked thus * are voluntary for scholars of classical schools, but are compulsory at the military schools.

(IV.) Course of Instruction at the Preparatory Schools for the Technical Academy.

Subjects.	Course of Lectures during		
	1st Year.	2nd Year.	3rd Year.
	Hours per Week.	Hours per Week.	Hours per Week.
Religious Instruction	2	1	1
German	4	3	3
French	4	3	3
History and Geography	4	4	4
Mathematics	7	5	5
Analytical Geometry and Drawing	3	4	3
Natural History	2	2	2
Natural Philosophy	—	3	5
Practical Chemistry	3	3	—
Hand and Mathematical Drawing	2	4	4
*Caligraphy	1	—	—
Military Style and Finance	2	2	2
Artillery } Practice / Pioneer } Practice	4	4	3
Service Regulations	1	1	1
Drill and Manœuvre Regulations	2	2	3
Management of Horses	—	—	2
Athletic Games / Fencing	3	3	3
Total hours per week	44	44	44

* In the Higher Technical School, voluntary. At the Pioneer School, instruction in the obligatory sciences may be given at Government expense.

(V.) Course of Instruction at the Military Academy at Wiener Neustadt.

Subjects.	Course of Lectures during			
	1st Year.	2nd Year.	3rd Year.	4th Year.
	Hours per Week.	Hours per Week.	Hours per Week.	Hours per Week.
Religious Instruction	1½	1½	—	—
Latin	4	4	—	—
Greek	3	2	—	—
French	4	4	3	3
German and Literature	3	3	3	—
History and Geography	4	—	—	—
Physical Geography	4	—	—	—
Preparatory Philosophy	1½	—	—	—
Philosophy	—	4	—	—
Higher Mathematics	5	6	—	—
Astronomy	—	—	4	—
Analytical Geometry	—	—	4	—
Practical ditto and Surveying	—	3	—	—
Natural Philosophy and Fundamental Laws of Chemistry	4	—	—	—
Theoretical Mechanics	—	—	4	—
Review of Law and Statesmanship	—	—	2	—
Constitutional Law of Austria, and its Administrative Organization	—	—	3	—
European State and International Law	—	—	—	3
Austrian Military Law (Criminal)	—	—	—	2
Military Finance	—	—	2	3
Construction of Arms	—	—	2	3
Pioneer Service	—	—	3	—
Fortification	—	—	—	4
History of War	—	—	—	2
Drill Regulations	2	—	—	—
Service do.	—	1½	1½	—
Manœuvre do.	—	—	1½	1½
Cavalry do.	—	—	—	1½
Tactics	—	—	—	6
Surveying, Tracing, and Mapping	4	4	4	—
Riding	—	—	—	6
Fencing	2	2	2	2
Athletic Games	2	2	2	—
Dancing	2	2	—	—
Total hours per week	42	41	41	41
Voluntary Subjects :—				
Bohemian Language	—	—	2	2
Hungarian Language	—	—	2	2

(VI.) Course of Instruction at the Technical Military Academy at Vienna.

Subjects	Number of Hours per Week.					
	United Preparatory Course.		Engineer Course.		Artillery Course.	
	1st Year.	2nd Year.	3rd Year.	4th Year.	3rd Year.	4th Year.
Zoology and Botany	3	—	—	—	—	—
Mineralogy	1	—	—	—	—	—
Geology	—	—	2	—	—	—
French	3	3	3	2	3	2
Higher Mathematics (1st, 2nd, and 3rd years), Higher Geodesy (4th year).	8	5	2	4	2	4
Analytical Geometry	4	—	—	—	—	—
Sketching	4	—	—	—	—	—
Practical Geometry	—	4	—	—	—	—
Chemistry of Minerals	3	—	—	—	—	—
Chemical Manufacture	—	—	—	—	—	4
General and Technical Natural Philosophy.	2	3	—	—	—	—
Mechanical Technics	—	—	2	—	2	—
Technical and Analytical Mechanics	—	5	2	—	2	—
Construction of Machinery and Drawing	—	—	4	—	—	—
Description of Machinery	—	—	—	—	2	2
Mountain Roads	—	4	—	—	—	—
Planning and Sketching	—	—	5	6	—	—
Road and Water Communication, Practical Building and Planning.	—	—	5	5	—	—
General architecture	—	—	—	—	3	—
Machine making	—	—	—	—	3	5
Building	—	—	—	—	4	4
Ornamental Drawing	—	—	—	4	—	—
Review of the Law	—	—	—	2	—	2
Military Criminal Law	—	—	—	1	—	1
Construction of Arms (Engineer)	—	2	—	—	—	—
Do. of Batteries (Artillery)	3	6	—	—	—	—
Pioneer service	—	$1\frac{1}{2}$	—	—	—	—
Fortification	—	—	4	6	3	3
Sappers' and Miners' Duties	—	—	—	2	—	—
Military Finance	—	—	2	2	3	3
Drill Regulations	2	—	—	—	—	—
Service ditto	$1\frac{1}{2}$	$1\frac{1}{2}$	—	—	—	—
Manœuvre ditto	—	—	—	2	3	—
Cavalry ditto	—	—	—	—	—	2
Tactics	—	—	2	2	2	2
Surveying and Tracing	—	6	3	—	3	—
Riding	—	—	3	3	6	6
Fencing	2	2	2	2	2	2
Dancing	2	2	—	—	—	—
Total hours per week	$40\frac{1}{2}$	41	43	43	51	50

(VII.) Upper Course of Study for the Artillery.

Subjects.	Course of Lectures during	
	1st Year.	2nd Year.
French	1	1
Practical Mechanics	1	—
Construction of Machinery	1	—
Fortification and Field Armaments	—	1
Science of Higher Artillery	1	—
Military Geography and Statistics	1	—
Higher Tactics and Strategy	—	1
National Economy and Finance	1	—
Organization of the Constitution, and Administration	—	1
State and International Law	—	1
German Literature	1	—
Active Duties of the General Staff	—	1

(VIII.) Upper Course of Study for the Engineers.

Subjects.	Course of Lectures during	
	1st Year.	2nd Year.
English	1	1
Chemistry and Practical Technics	1	1
The Mechanism of Building	1	—
Fortification	1	1
Architecture	1	1
Ornamental Architecture	1	1
Military History	—	1
Science of Artillery	—	1
Strategy	1	—
National Economy and Finance	1	—
Organization of the Constitution, and Administration	—	1
State and International Law	—	1
German Literature	1	—

(IX.) Upper Course of Study for the War School.

Subjects.	Course of Lectures during	
	1st Year.	2nd Year.
German Literature - - - - -	1	1
French - - - - - -	1	1
Administrative Duties of the Staff - - -	1	1
Active Duties of the General Staff - - -	—	1
Tracing and Surveying - - - -	1	1
Military Geography - - - -	1	—
Higher Tactics - - - - -	1	—
Strategy - - - - - -	—	1
Engineer Service - - - - -	—	1
Artillery Service - - - - -	—	1
Rudiments of State and International Law -	—	1
Rudiments of National Economy and Administrative Law.	—	1
Riding - - - - - -	1	1

THE AUSTRIAN STAFF.

Extract from a Despatch from Colonel Hope Crealock, C.B., dated Vienna, April 9th, 1869.

It is decided to abolish the Special Staff Corps. The system will be organized as in England. All the officers will be borne on the army rosters according to their ranks, but not by regiments, as with us, but by the particular branches of the service; for instance, all the colonels of cavalry, infantry, &c. &c. separate. No one will be allowed to enter the Staff School until he has served three or four years with the troops, and then captains and first lieutenants will be preferred to men of less service or rank. Having passed through the school course they will again join their regiments, and will then be appointed to the staff, as may be required. The period during which they are to remain on the staff will depend on their merits, their promotion, and the exigencies of the service; but as a principle they would generally rejoin their troop on promotion. There can be no doubt in the minds of those who have practically studied the question that the system is sound. A special Staff Corps is never large enough to supply the demands of an army in the field for long, especially if the war is long

and very active. The duties of a staff officer with an army actively engaged in the field are so numerous and arduous that an *enormous number* are used up in the course of a campaign; and when you have only the Staff Corps to draw from, the supply of practical good officers is not equal to the demand. The French experienced this in the Crimean War. By educating a number of young officers endowed by nature with the qualifications indispensably neeessary to form an *efficient* staff officer *on active service*, and by throwing them back into your regiments, you leaven the mass, and you form a fund of selected and instructed officers from which you can draw as many as you require when the moment arrives, and you have the whole army to choose from. It may be urged that the two systems can be worked together, but a special Staff Corps always produces jealousy and ill-blood in the regiments, and they do not pull harmoniously together; and if an officer is to be made a staff officer, after only three or four years with the troops, for life, it is not possible for him to be fitted by his experience of men and their wants to be a good general officer.

GENERAL OUTLINE

OF THE

SYSTEM OF MILITARY EDUCATION IN AUSTRIA,

BY

COLONEL CONOLLY,

MILITARY ATTACHÉ AT VIENNA.

(A.) Memorandum giving a brief Sketch of the Educational System of the Austrian Army as regards Commissioned Officers.

Vienna, 10th November 1869.

Preliminary remarks.

It must be particularly borne in mind that the system of military education in Austria, like so many other branches of the imperial service, is at this moment in *a state of transition*, and that considerable changes may be expected.

From information which has been received from Baron Kuhn, the Minister of War, and Colonel Vlasitz, head of the Educational Department at the War Office, it appears that no alterations of importance have taken place with regard to the regulations for the various schools, as reported on by my predecessor, Colonel Crealock, and that the course of study at each continues the same. The subjects upon which aspirants for officers' commissions are examined also remain unchanged.

Appointment of officers.

Any Austrian subject who can give testimonials of good conduct, and pass the requisite Medical Board, can, from 19 to 20 years of age, enter the army as cadet, after passing the examination for that rank.

The regulation now is (but a change in it is expected) that the cadet must serve in the ranks as non-commissioned

officer or private two years before going up for the officer-aspirant's examination. Having passed that, he is eligible for the rank of officer when his turn comes. There are 13 schools for cadets distributed over the principal stations of the imperial army. Non-commissioned officers and soldiers who attend them two years, and pass the examination, can be made cadets, and, at the end of two years more, can equally present themselves to be examined for the position of officers aspirant.

Pupils of the military academy at Wiener-Neustadt can get direct commissions.

Artillery and Engineers.

There are special schools at Vienna for the Artillery and Engineers, from whence pupils can get direct commissions. This does not, however, prevent any young man (wherever educated) from competing in the examination for cadetships in these corps. Pupils who pass a fair examination, but not equal to the requirements for Artillery or Engineer officers, can be posted to cavalry or infantry.

Promotion of officers.

At present there is no examination for the regimental promotion of officers, except when a captain is to be advanced to the rank of field officer. In this case he is examined by a Board composed of two major-generals, with a lieutenant-general as president, in the higher branches of strategy, tactics, and military administration. It is probable that a thorough revision of this regulation will shortly be made.

Instruction of officers.

No measures are now in operation for unprofessionally instructing officers after they have attained that rank; but here, again, great changes may be expected. The central cavalry school at Vienna may be looked upon as forming some exception, as the scope of the instruction given there has been much enlarged. Lessons in all duties required of an officer in the field are added to those of equitation, and in the breaking and management of horses. Hitherto none but captains have been admitted, but it is in contemplation to open it to subalterns, and to establish schools upon the same principle for infantry officers at one or more of the chief military stations.

Staff.

To be appointed to the staff an officer must have served (*as officer*) three years in a regiment, or in the Artillery or Engineers, and he must then go for two years to the Kriegs-Schule at Vienna. The Kriegs-Schule is a military university, out of which 40 officers pass every year, and are replaced by an equal number of new pupils. The instruction comprises all the higher branches of military science, lectures on the art of war, and practical work in the field.

During the season of manœuvres the pupils are attached to the troops which are engaged in them.

An officer who has passed the examination at the Kriegs-Schule is eligible for the staff.

Under the present system there is a special Staff Corps in the Austrian army, fed by the Kriegs-Schule, and officers can be promoted in it; this, however, will be changed. Staff officers when promoted will receive their advancement in regiments, and serve in them until vacancies occur to replace them on the staff; for it has been found that long service in positions, where there is little immediate contact with the troops, is apt to engender an inaptitude for appreciating their capabilities and wants when on active service. I have often heard the same opinion expressed by French officers when discussing their own special Staff Corps.

Commanding officers of regiments are expected to give instruction to their subordinates as to the mode of carrying out their various duties, and especially, after manœuvres and field days, to explain the object of the movements which have been executed.

Officers of Landwehr.

The officers of the Landwehr are taken from the one-year volunteers (*Frei-Willigen*), who, under the present conscription system, get off with this short service on condition of finding their own clothes, provisions, &c. in time of peace. They must pass the officer-aspirant's examination, and having done so, can be appointed Landwehr officers as soon as they have completed their twelve months in the ranks.

Failing in this examination, they have the right to a second trial, or they may be transferred to the Landwehr as non-commissioned officers.

Division and Brigade schools.

The Division and Brigade schools for officers, open from October to May, and where nothing but pure military routine instruction is imparted, are now under revision. These schools are under field and staff officers.

Offiziers-Stell-Vertreter.

Cadets with the rank of "*Offiziers-Stell-Vertreter*" are those who have passed the best examinations, and are kept first on the list to become officers as vacancies occur. For example, in a cavalry regiment there is one per squadron, making six in all; when one is promoted his place is supplied by the most deserving cadet. The number of cadets is not limited.

Schools for non-commissioned officers and privates.

There are two regimental schools in each regiment for non-commissioned officers and men:—

1st. For men who aspire to the rank of serjeant.

2nd. For privates who desire to have the simplest education only, and for those who do not aspire to rise beyond corporal.

These schools are under a lieutenant, assisted by serjeants, and are in operation from October until May.

Expenditure on military education.

The following is an estimate of the sums which it is intended to appropriate to Military Education in Austria during the year 1870:—

For non-commissioned officers and men, 504,000 florins (40,320*l.*).

For officers, 978,000 florins (78,240*l.*).

James Conolly,
Colonel and Military Attaché.

(B.) Account of the Cavalry Brigade Schools for Officers.

Vienna, November 28, 1869.

The following memorandum gives an account of an Order lately issued, regulating Officers' Brigade Schools in the Austrian cavalry.

The object of the Cavalry Brigade schools will be to secure a supply of efficient riding masters throughout the service capable of giving general instruction.

The Central Cavalry School will continue to be a higher military and scientific establishment, with (in addition to the theoretical education of the pupils) a course of instruction which ensures a uniform system of equitation and of breaking horses. A certain number of its best pupils may be transferred, after a year's attendance, to the *Kriegs-Schule*, with a view to their preparation for the staff.

Cavalry Officers' Brigade Schools educate officers of that arm, theoretically as well as practically, in all their duties. After the termination of the autumn manœuvres one will be formed in each brigade. The annual course lasts six months, and should begin on the 1st of October.

It is the duty of the Brigadier to superintend the school, but it is also that of commanding officers of regiments to inform themselves of the progress of their officers, and consequently to visit it often.

Before the 15th of August the Brigadier proposes to the Minister of War the station at which the school should be

established, also the names of the instructors and pupils. It rests with him to make all arrangements for setting it in operation; and as his supervision must be continual, he should (whenever practicable) place it at the head-quarters of his brigade. Above all, a covered riding school must be fitted up; then a drill ground, a manège with artificial fences, and a school and fencing room. Whenever possible the men and horses must be in barracks.

The best qualified officer in the brigade, of the rank of lieutenant-colonel or major, is to be selected for Commandant, and each school is to have two captains as instructors. One of them must have gone through the Central Cavalry School, and must have been reported as specially qualified to give instruction; the second must be considered one of the best horsemen in the brigade.

At the disposal of these officers there is the following staff:—

1 veterinary surgeon for instruction in the anatomy, diseases, and shoeing of horses; 1 sergeant in charge of the men and horses; 1 sergeant for quartermaster's duties and accounts; 1 farrier; 3 corporals; 1 trumpeter; 12 men per regiment of the brigade; and the riders of the horses attached to the school.

If there is an auditor* available, he attends regularly to explain the Articles of War and give lectures on military law. Should there be none, this duty devolves upon one of the captain instructors.

Six officers from the rank of first lieutenant downwards are sent yearly from each regiment. Each of them brings with him, besides his own horses, the one allowed him by Government. Every regiment sends six remount horses that have passed the first stage of breaking, and six that have just joined.

The principal subjects of theoretical instruction are—1st. Regulations of the army. 2nd. Tactics, particularly as referring to the handling of cavalry. 3rd. Field movements, and especially outpost duty, which are to be illustrated by examples from the history of war. The pupils will also draw and describe a tract of country, and give written reports upon field operations. 4th. Description of the anatomy and diseases of horses, with their management and feeding, both in the stable and the field; shoeing, theoretical and practical, in all its details. 5th. Thorough practice in the use of

* The auditor is an officer discharging similar duties to our deputy judge advocates. There is one to each brigade and large garrison, where he acts as adviser on military law to the commandant.

cavalry weapons, a general acquaintance with the arms of the artillery and infantry of the principal military nations, and an accurate knowledge of those employed in the Imperial army. 6th. A general knowledge of field fortification and of the works to be executed by the Pioneer Corps in combination with cavalry. 7th. The study of tracts of country, extending to the observation of roads, streams, coverts, and undulations; the correct reading and understanding of maps.

The sketches to be made by the pupils are required in pencil only, and it is sufficient if they give an intelligible idea of the ground.

No instruction is provided in the various national languages, but it is expected of every pupil to acquire the requisite fluency in that of his own regiment.

Where circumstances permit, theoretical instruction is always to be combined with practical illustration.

The practical branch of education at these schools has for its main object the maintenance throughout the army of the best fundamental system of equitation, and the adoption of any improvements in the cavalry service in general which may appear advisable. To this is added practice in getting over long distances through every description of country, and in judging when and where halts should be made with most advantage to single horsemen, or to detachments of troops. These marches are to be combined with patrolling, reconnaissances, and posting piquets, and are to be practised once a week.

After every such march the pupils will send in a brief report and rough sketch, either next morning or within forty-eight hours, as may be ordered. They are to practise making this sketch on horseback as well as on foot. They must perfect themselves in gymnastics, and in fencing and singlestick, both on foot and horseback.

The distribution of hours for instruction will form the subject of a yearly recommendation by the Inspector General of Cavalry to the Minister of War, as will also the list of books to be used at the Brigade Schools.

The regulations issued upon this subject will be strictly followed, and no deviation from the hours therein prescribed will be permitted except under particular circumstances. Sundays and holidays are observed. No leave of absence, except in cases of urgent necessity, can be granted to either instructors or pupils during the course.

It is the duty of Brigadiers to watch assiduously the progress of the course, and at its termination to subject the pupils to an examination. The Commandant of the school

makes out for each pupil a qualification sheet (*Qualifikations-Liste*), under the following headings (*Rubriken*):—

Regiment—rank—name—age—state of education when joining the school—zeal and diligence—success with which the course has been gone through—general remarks.

The performances of the pupils will be classified as "excellent," "good," or "insufficient;" and the degree of merit of each pupil will be estimated from an average of his performances in each branch of the course.

After the Brigadier has received the reports of the Commandant and instructors, he forwards them to the Minister of War, with such remarks upon the entire school, or upon individual instructors or pupils, as may appear to him advisable. The Brigadier also sends similar reports upon pupils and instructors to the regiments to which they belong.

Those pupils who from sickness, awkwardness, or former ignorance, have not been able to make sufficient progress, are (unless good reasons can be shown to the contrary) to be designated by the Brigadier for a repetition of the course.

At the end of the season of instruction (*i.e.* at the end of March) the Cavalry Officers' Brigade School will be broken up; and all persons attached to it, and their horses, will return to their regiments.

The appropriation of more Government buildings and ground than is absolutely necessary to the use of the Cavalry Brigade School is strictly forbidden; nor is the hiring of any exclusive drill ground permitted.

The Engineer department of the district in which any such school is formed will render every assistance in men and material for the purpose of organizing suitable premises on the Government property, with riding school, manège, and rooms for lectures and study.

JAMES CONOLLY,
Colonel and Military Attaché.

ACCOUNT

OF THE

SYSTEM OF MILITARY EDUCATION

IN

BAVARIA,

BY

C. HENEAGE, Esq.,

THIRD SECRETARY AT THE BRITISH LEGATION AT MUNICH.

ACCOUNT

OF THE

SYSTEM OF MILITARY EDUCATION IN BAVARIA.

There are four establishments for Military Education in Bavaria— Military educational establishments.

1. The Cadet Corps.
2. The War School.
3. The Artillery and Engineer School.
4. The War Academy.

The Cadet Corps.

The Cadet Corps was by a royal decree of May 14th, 1864, placed on the same footing with regard to instruction and final examination as the Real Gymnasium, and by a further decree of April 2nd, 1868, the signification and value which are attached to an *Absolutorium*, or certificate of final examination, of a Real Gymnasium were equally made to apply to an *Absolutorium* of the Cadet Corps. Cadet Corps.

There are three classes.

For admission into the first class candidates must be acquainted with the following subjects :— Entrance examination. First class.

(1.) *Religious Instruction.*

(*a*) For Catholics :

First chapter on Belief (*von den Glauben*), with preceding introduction, from page 33 to page 96.

Great Catholic Catechism for all Bavarian bishoprics.

(*b*) For Protestants :

The heads of the Christian doctrine, with the ecclesiastical explanation of the same, as well as the most important passages of the Bible contained in the catechism.

(II.) *German.*

Grammar: formation of sentences; change in the form of sentences; copying from dictation small stories, narratives, and letters; facility in orthography, and correct punctuation.

(III.) *Latin.*

Elementary rules: easy translations from Latin into German, and from German into Latin.

(IV.) *French.*

Tolerably correct reading.

(V.) *Mathematics.*

Vulgar fractions; decimals; rule of three; interest; exercise in mental calculations.

(VI.) *Geography.*

Europe generally, and Germany in particular, with especial regard to mountain chains and river districts.

(VII.) *Caligraphy.*

German and English characters.

Second class. For admission into the second class candidates must be acquainted with the following subjects:—

(I.) *Religious Instruction.*

(*a.*) For Catholics:

A knowledge of the second chapter on the Commandments (*von den Geboten*), pages 100 to 159 inclusive.

Great catechism for all Bavarian bishoprics.

(*b.*) For Protestants:

All the knowledge obtained from the so-called preparatory instruction for confirmation (*Praeparanden-Unterricht*).

(II.) *German.*

(III.) *Latin.*

Syntax: verbal and written translations from German to Latin, and from Latin to German, out of Cornelius Nepos.

(IV.) *French.*

Grammar: translation; reading; orthography.

(V.) *Greek.*

Syntax up to verbs in $\mu\iota$; written and verbal translations from German to Greek, and *vice versâ*. Greek characters.

(VI.) *Mathematics.*

System of weights and measures; fractions; decimals; mental arithmetic.

(VII.) *History.*

Greek and Roman history, including the period up to Clovis, king of the Franks.

(VIII.) *Geography.*

The world in general, Europe excepted.

(IX.) *Caligraphy.*

German and English characters.

Third class.

Candidates for immediate admission into the third class must not have exceeded their fifteenth year, and must produce certificates of all the classes of the Latin school.

At their examination for admission they must show that they are acquainted with all the subjects required in the examinations for the first and second class; and also with the following subjects:—

(I.) *Religious Instruction.*

(*a.*) For Catholics:

A knowledge of the third chapter on Means of Grace (*von den Gnadenmitteln*) page 160 to page 228.

(*b.*) For Protestants:

Candidates must not only be thoroughly acquainted with the so-called preparatory instruction for confirmation, but must have been confirmed.

(II.) *German.*

Composition: translation from Cornelius Nepos. Reading aloud.

(III.) *Latin.*

Complete Syntax. Written and verbal translations from German to Latin; Cæsar's Commentaries; select passage from Roman historians; prosody; versification.

(IV.) *French.*

Translations: German into French, and *vice versâ*; orthography and reading.

(V.) *Greek.*

Rudiments of grammar.

(VI.) *Mathematics.*

Algebra; geometry.

(VII.) *History.*

German history (from Clovis, king of the Franks), especially that of Bavaria.

(VIII.) *Geography.*

Europe; including political and statistical relations.

(IX.) *Caligraphy.*

German and English characters.

Admission to the army from the Cadet Corps.

On leaving the Cadet Corps—

(*a.*) Students who have obtained from the Examination Commission a certificate of "especially qualified" are named candidates, first class, for the rank of officer.

(*b.*) Students who have obtained a certificate of "qualified" are sent to a division of the army as candidates, second class, for the rank of officer.

Further, those who have displayed a "marked proficiency," not only as regards scientific acquirements but also as regards conduct and military capacity, may be appointed by the Education Commission to the rank of sub-lieutenant.

These last, however, in common with the candidates mentioned under heads (*a*) and (*b*) are required, after six months service in a division of the army, to pass through the military scientific course in the War School, and at the end of the course to undergo an examination.

The same conditions are alike in force for the young nobility entering the army from the *Pagerie* with the *Absolutorium* of a gymnasium.

The War School.

The War School.

There are two courses—

(*a.*) The preparatory course.

(*b.*) The military scientific course.

Preparatory course.

All persons desirous to obtain commissions as officers, whether compelled to enter the army, or volunteers, must undergo the preparatory course at the War School, unless they are in possession of an *Absolutorium* of a Latin or Real Gymnasium.

These candidates for course (*a.*) must pass an examination for admission, and as a qualification for admission must have served an entire year satisfactorily in a division of the army.

After the completion of the preparatory course these students are named candidates, second class, for the commission of officers, and as such enter the military scientific course.

Military course.

The following enter the second course:—

(*a.*) Students with the *Absolutorium* of a Real Gymnasium, or coming from the *Pagerie*.

(*b.*) Students who have passed the preparatory course successfully.

(*c.*) Those to whom military service is compulsory, and volunteers, both possessing the *Absolutorium* of a Bavarian gymnasium, and being desirous to become officers. These candidates must, however, perform six months' service satisfactorily, and on termination of this service they are named candidates, second class, for the commission of officers.

Final examination.

At the expiration of the military scientific course there is a general examination before the "Commission of High Studies and Examinations," and decision is given—

(*a.*) Respecting efficiency for the position of officer.

(*b.*) Respecting the army rank of those who have passed their examination without reference to former rank (*Chargen-verhältnisse*).

Very distinguished conduct before the enemy can alone exempt candidates from this examination.

Appointment to the rank of officer.

Candidates examined are classed by the above Commission under the following heads: "*especially qualified*," "*qualified*," and "*not qualified*;" and no candidate for the commission

of officer can be named officer without the certificate of "*qualified*."

Candidates, who have shown the necessary efficiency to entitle them to be appointed officers, are named candidates, first class, for the commission of officer, or, in consequence of the diminished number of officers in the active army, are promoted to be sub-lieutenants.

Only those candidates for the commission of officer, who have received the certificate "especially qualified" in the above final examination of the military scientific course, can announce themselves for admission into the War Academy.

The Artillery and Engineer School.

Artillery and Engineer School.

In this school, consisting of two courses, each lasting a year, an opportunity is afforded to all candidates, first class, for commissions as officers to devote themselves to technical military science, and to pursue the special studies having reference to the military operations in question; and, in this school, only those candidates for the commission of officer are received, who have successfully passed the military scientific course, and who, at the examination passed before the "Commission of High Studies and Examinations," have been pronounced "*qualified*" not only to remain in the Artillery and Engineer regiment, but especially qualified to enter the Artillery and Engineer School.

Immediately after passing the second course of the War School, and before admission into the Artillery and Engineer School, these candidates must serve six months in an Artillery or Engineer regiment.

Candidates pass over from the first to the second course without a general examination, and should a doubt exist respecting the efficiency of any of the candidates, such candidates will be required to undergo a special examination before the "Commission of High Studies and Examinations," who will decide, in the case of such candidates, whether they are to go through the course a second time, or retire from it.

Appointments to commissions.

The same regulations apply for the second course, and the appointments as sub-lieutenants of Artillery or Engineer students are determined according to the number of officers required in those corps.

Candidates for the Engineers are required, after passing through their school, to undergo a six weeks' course of design, during which period each candidate must without assistance make a complete drawing of an edifice.

The War Academy.

The War Academy has for its object the higher scientific and practical education of officers, in every branch of the military profession, on the staff, as also of the higher adjutants. It aims also at the development of all military scientific subjects. The War Academy.

The War Academy has three courses, each lasting nine months, and the intervals are employed in practical exercises.

The number of students in one course must, as a rule, not exceed 12, and every upper or sub-lieutenant, who has served not less than four years with the troops, can attend the academy. Conditions of admission.

Officers are only admitted into this school, who possess the requisite knowledge of their respective branches of the military service.

Further, their conduct must have been highly satisfactory; they must be sound in health, and their pecuniary affairs must be in good order, and they must combine prominent mental qualifications with a tendency to higher scientific developments.

The "Commission of High Studies and Examinations" decides by examination as to the necessary qualifications for admission; then follows a summons, issued by the Ministry of War, to attend the War Academy, and each time only for one year.

Officers who, on the decision of the Examination Commission, do not display sufficient capacity or zeal, or whose military behaviour or moral conduct has not been satisfactory, will not be summoned to attend the next course.

The scientific education of those admitted into the War Academy consists also in— Course of instruction.

(*a.*) Attending lectures at the University and the Polytechnical High School.
(*b.*) Higher lectures upon military scientific subjects.
(*c.*) Exercises in living languages.

The practical education embraces the duties of staff officers and of higher adjutants, acquaintance with the different branches of military service, also corporal activity, and especially exercises on horseback.

Officers who, on the decision of the Examination Commission, have during the three courses of the War Academy displayed zeal, talent, and application will, on leaving the academy, have their names sent in to the King for especial notice.

Government of the various schools.

Each of the military schools has its own commandant. The Cadet Corps is commanded by a First Lieutenant of Infantry, the War School by a Major of the Quartermaster-General's Staff, the Artillery and Engineer School by a Major of the Engineer Staff, and the War Academy by a Colonel of the General Staff, to whom an Adjutant is attached.

General superintendence of military education.

With regard to the systematic process of education pursued in the military schools, and to the application of the different means employed to impart instruction, these establishments are placed under the superior direction of the "Inspection of Military Schools;" in all other respects, they are under the control of the Ministry of War, and the professors employed in them are selected according to their special qualifications.

C. Heneage.

Munich, August 30, 1869.

ACCOUNT

OF THE

SYSTEM OF EDUCATION

AT THE

UNITED STATES MILITARY ACADEMY AT WEST POINT.

BY

COLONEL P. L. MACDOUGALL.

INSTRUCTIONS ISSUED TO COLONEL MACDOUGALL.

Colonel MacDougall is requested to report in detail, for the information of the Royal Commission on Military Education, upon the following points :—

1. The general method in which the United States army is officered ; the special objects of the Military Academy at West Point ; its relations to the army of the country, showing how far they resemble those of either Sandhurst, Woolwich, or the Staff College to our own service ; whether a course of instruction at it is a necessary qualification for admission to the scientific branches or the staff of the army ; the proportion of officers in the service who have graduated at the Academy.

2. The administration and organization of the Academy, stating in whose hands the government is vested, and whether the resident chief officer is supreme in his powers, or is controlled by visitors or commissioners.

The provision made for the general superintendence of the instruction of the cadets, the selection of the subjects taught, and the arrangement of the studies.

The establishment of officers of the Academy, the number of professors and instructors, and the proportion of civilians to military officers among the latter.

3. The number of cadets at the Academy, the periods at which they are admitted, and the number admitted on each occasion ; the age and qualifications of candidates for admission ; the mode of admission, whether by competitive examination, nomination, or otherwise.

4. The length and nature of the course of study at West Point, showing whether it is of a general or of a purely professional character, and whether all cadets are required to complete it within the same period ; whether any distinction is made between candidates for different branches of the service as regards the instruction given them ; whether any of the subjects of study are left optional to the cadets ; and whether all subjects are studied simultaneously, or a separate period of the course is devoted to each.

The relative importance attached to different subjects, especially as regards mathematics, surveying, fortification, military law, military history, and modern languages; the amount of mathematical attainments required of the students, and the extent to which powers of fluent conversation in modern languages are acquired.

The attention paid to practical as distinguished from theoretical instruction, stating whether the cadets learn drill, field movements and duties of active service, interior economy, the practice of courts martial, and the various practical duties of regimental officers, so as to be fitted for duty on appointment to their regiments.

The extent to which instruction is given in riding, swimming, fencing, gymnastics, musketry, and gunnery.

The time at which the practical part of the instruction comes in the course, stating whether it is spread over the whole period of a cadet's residence at the Academy or commences shortly before he obtains his commission.

5. The classification of the cadets, and the arrangement of the classes for the purposes of instruction.

The mode of imparting instruction, whether by public lectures or by private tuition, stating whether anything approaching to the French system of *Répétiteurs* exists at the Academy, and whether all work is done during the hours of lecture under the eye of the professors, or whether encouragement is given to private study.

6. The number of hours allotted to study and recreation respectively in the course of the day; the number and length of the vacations during the year.

7. The mode in which proficiency in the subjects studied is estimated, whether merely by the results of periodical examinations or by marks allotted to the work done during the course.

In the latter case full information would be desirable as to the general principles on which marks are assigned, the authorities by whom they are awarded, and the extent to which they are carried forward; showing also how far proficiency in any practical subjects of instruction, such as drill, riding, gymnastics, &c., is allowed to count in a cadet's favour.

8. The number and nature of the examinations held during the course, stating whether they are competitive or merely qualifying, and whether their results affect the final examination.

The nature of the final examination at the end of the course; the qualifications required for obtaining an appoint-

ment to the army; the proportion of cadets who fail to obtain appointments, and the general causes of such failures.

The mode in which the various examinations are conducted, whether by the professors of the Academy or by independent examiners, and whether *vivâ voce* or by printed papers.

If papers are set, it would be desirable to obtain specimens of them.

9. The means by which attention to studies is secured; the punishments for idleness, noticing especially whether it leads to dismissal from the Academy; the general character of the cadets for studiousness or the reverse.

The nature of the inducements to study held out to the cadets while at the Academy, in the shape of prizes, pecuniary rewards, degrees, early appointment to the army, choice of a particular branch of the service, &c.

10. The advantages resulting from a degree or peculiar distinction at West Point in regard to professional advancement, staff employment, &c., after entering the army.

11. The discipline of the Academy; to what extent the cadets are legally subject to the Articles of War and treated as private soldiers.

How far the discipline (1) is akin to that of an ordinary civil college, or (2) has such such a military character as to assimilate it to that of a regiment.

The officers with whom the responsibility of enforcing discipline rests, stating whether a distinct staff is maintained for purposes of discipline and instruction respectively; and, if so, how far the professorial staff (both military and civil) exercise powers of discipline.

The extent to which any system exists of selecting under officers, &c. from the cadets themselves to assist in maintaining discipline; the principle on which such selections are made, whether on intellectual or moral grounds; and the powers entrusted to cadets so selected.

The general regulations for the conduct of the cadets; the restrictions in regard to smoking, drinking, gambling, and immorality; to what extent the cadets are subjected to control during recreation hours, and the means employed to exercise supervision over them at such times.

The nature of the punishments inflicted; the powers of the chief resident officer and of the other officers in regard to punishment, stating with whom the power of expulsion rests, and whether arrest is on honour or under actual restraint.

The course of action adopted in regard to bringing cadets to punishment for misconduct.

The mode in which the system of assigning marks for good conduct is carried out, showing how far such marks count towards a cadet's place in the examination list.

The relations between the officers of the Academy and the cadets in private life, stating to what extent any moral supervision is exercised over the latter apart from mere purposes of discipline.

The general bearing and character of the cadets; the moral tone, gentlemanly feeling, and *esprit de corps* existing among them; the attention paid to soldier-like appearance and smartness during recreation hours; the amusements chiefly indulged in.

How far any difficulty is found in maintaining a uniform system of discipline owing to the difference of age among the cadets, stating whether any relaxation of discipline is made in the case of the older or more advanced students.

12. The accommodation provided for the cadets; the mode of lodging and messing them; the arrangements in regard to dormitories, day rooms, lecture halls, &c.; the extent to which reading or other recreation rooms are provided.

13. The financial arrangements of the Academy, stating whether any payments are required from the cadets, or whether the institution is entirely supported by the State; the average annual cost of the Academy to the Government.

14. The opinion held by the principal officers of the Academy as to the sufficiency or otherwise of the course of instruction, the maintenance of discipline, and the general working of the arrangements of the institution.

15. The general character of the officers who have passed through the Academy; the opinion held in the United States army generally as to the advantages of a course of instruction at West Point, the feelings entertained by former cadets towards the Academy, after having entered the army.

16. If officers for all branches of the service are educated at West Point, explanations should be given as to the means by which the special qualifications required for the different branches are secured, the principle on which appointments to the various arms are made, and the extent to which officers subsequent to their appointment to the army can be transferred from one branch of the service to another.

The advantages claimed for the system of having one general place of instruction for all arms in preference to special colleges for different branches of the service should also be fully explained.

The amount of practical training required after leaving

the Academy for young officers of the Artillery or Engineers should be stated.

Particular attention should be directed to the question whether there is any Academy or special education for staff officers, at what period in their cases such education takes place, and how far proficiency in military studies is essential for admission to the staff.

If any other points occur to Colonel MacDougall upon which he thinks it desirable to compare the system at West Point with that of the English military academies, he is requested to bring them before the notice of the Commission.

JOHN W. HOZIER, Lieut.,
Secretary.

September 20, 1868.

ACCOUNT

OF THE

SYSTEM OF EDUCATION

AT THE

UNITED STATES MILITARY ACADEMY.

Section 1 of Instructions.

Mode of officering the United States army.

1. The commissioned officers of the United States army are drawn from three sources:—1st, from civil life; 2nd, from the rank and file; 3rd, from the cadets of West Point.

The first class are appointed by nomination, without any previous military training, and without requiring any qualification.

The second class are taken from the serjeants of the army, who must first pass an examination in some of the very elementary branches of common school education before a board of four army officers of rank specially convened.

The third class are appointed from the cadets of West Point, the condition being *graduation* at the institution.

2. The average yearly number of vacant commissions in the army, for the ten years ending in 1861, was 42; while the average number of cadets admitted yearly to West Point was 78. Since the termination of the civil war the number of yearly vacancies has been more than double that above given, while the yearly admissions to the Academy have fallen off, owing to the fact that several of the Southern States have not, since the war, been represented at the Academy.

3. From 1815 to 1832 the army was small and almost exclusively officered from the Military Academy. The war against the Florida Indians from 1832 to 1837, the war with Mexico from 1845 to 1848, and the civil war from 1861 to 1865, necessitated an expansion of the army by the raising of a volunteer force, and regiments were then largely officered from civil life. The increase of the regular army in

Section 1 of Instructions.

1866 called into service a large number of civilian officers, who had served as volunteers. At the present time West Point supplies about one-third, and cannot supply more than one half, of the vacancies which annually occur.

Objects of the West Point Academy.

4. The special object of the West Point Academy is to obtain, by the means of one central institution, the same results as those sought to be attained in England by the special colleges of Sandhurst, Woolwich, and the Staff College.

5. Although direct appointments are made to the infantry and cavalry, graduation at West Point is an indispensable qualification for admission to the scientific branches, *but not to the staff of the army.*

Section 2 of Instructions.

Government and organization of the Academy.

6. A military officer, not usually below the rank of colonel, is appointed by the President of the United States as *superintendent* of the Academy, who has supreme local control over both the studies and discipline of the institution. He renders all prescribed returns, and addresses all communications relating to the Academy to the *inspector*. The powers of the superintendent as regards discipline are detailed elsewhere.

7. The general staff of the Academy consists of an adjutant, a quartermaster, a treasurer, one surgeon, and two assistant surgeons.

8. The *inspector* of the Academy is an officer of rank in the army named by the Secretary of War, who has his residence at Washington, and through whom all general orders relating to the Academy are transmitted to the superintendent at West Point. It is the duty of the inspector to make a thorough inspection of the Academy at least once in each year.

9. Although the system of the Academy as regards the training of the cadets both in and out of study is peculiarly and rigidly military, the staff of instruction is separate from the staff of discipline.

10. The military organization is as follows:—

The cadets are organized into a battalion of four companies.

Military staff.

11. The *commandant of cadets*, usually not under the rank of lieutenant-colonel in the army, exercises the immediate command of the battalion. He is also, *ex officio*, principal instructor in infantry, artillery, and cavalry *tactics* (signifying drill).

12. Under the commandant are six *assistant instructors of tactics*, viz.—one for artillery; two for infantry; one for cavalry; one for artillery and infantry; one for infantry and cavalry. The four senior of these officers command the four cadet companies respectively; the two junior officers

being always available to perform the routine duties of the others in case of absence. The assistant instructors must be officers of the army, and happen, at present, to be all of the rank of field officer, excepting one who is a captain. Section 2 of Instructions.

13. The battalion is provided with a full complement of *cadet* officers and non-commissioned officers, who are appointed by the superintendent from a list submitted by the commandant of cadets. Cadet officers and non-commissioned officers.

To each company are appointed

1 Captain.
3 Lieutenants.
1 First Serjeant.
3 Second Serjeants.
4 Corporals.

The battalion staff consists of

1 Adjutant.
1 Quartermaster.
1 Serjeant Major.
1 Quartermaster Serjeant.

14. The cadet companies are composed indiscriminately of the four classes into which the students are divided according to their respective years of residence, the period of residence being four years for all.

15. The cadet officers are taken from the first, or senior class; the serjeants from the second class; the corporals from the third class. The selection is not made with special reference to proficiency in study. Those are selected who have manifested the greatest military aptitude and respect for discipline in their own conduct; although *cæteris paribus* superior standing in study would be decisive.

16. The general superintendence of the studies is vested in the superintendent, assisted by the adjutant. The immediate staff of instruction is as follows: Staff for Instruction.

One professor One assistant professor Two acting assistant professors	Military and civil engineering.
One professor One assistant professor Two acting assistant professors	Natural and experimental philosophy.
One professor One assistant professor Five acting assistant professors	Mathematics.
One professor One assistant professor One acting assistant professor	Drawing.

Section 2 of Instructions.

One professor One assistant professor Two acting assistant professors	French.
One professor One assistant professor One acting assistant professor.	Ethics and Law.
One professor One assistant professor Two acting assistant professors	Chemistry, mineralogy and geology.
One instructor One assistant instructor	Ordnance and gunnery.
One instructor One assistant instructor	Practical military engineering. Military signals and telegraphing.
One sword master.	

17. All the professors and instructors, with their assistants and acting assistants, have been educated at West Point, with exception of the chaplain, the professors of French and Spanish, and the sword master. All are regularly enrolled in the military service of the United States, and subject to military discipline.

18. The professor of ethics and law acts as chaplain to the Academy, though he is not borne on the strength of the general staff as chaplain.

Duties of the professors.

19. The professor or chief instructor in each branch is responsible for the efficiency and uniformity of the system of instruction in his own department. To this end he has no special class or section assigned to him for tuition. His time is devoted to general superintendence, and is chiefly spent in visiting the halls of study of his assistants. He does, however, take the instruction of the different sections, each in their turn, as he sees fit, and occasionally assembles all the sections of his department for lecture.

Appointment of assistant instructors.

20. The assistant and acting assistant professors or instructors are always appointed from among officers on the full pay of their regiments who have graduated at the Academy, on the recommendation of the professor or chief instructor of the branch in which there is a vacancy to be filled. These assistants are carefully selected through means of the data of their proficiency, temper and general character, afforded by their record of four years' residence as cadets. They are, thus, all of them previously well known to the professors to whom they are to act as assistants, and to whom they are naturally

inclined to defer from old associations. The Academy appears to be very fortunate in the class of gentlemen employed as professors, as well as in the selection of the officers appointed as assistants. The tact, temper, and clearness of explanation evinced by the instructors in the halls of study are deserving of high commendation. Section 2 of Instructions.

21. The term of duty at the Academy of the assistant and acting assistant professors and instructors is fixed at four years, at the end of which period they return to regimental service. Duty at the Academy is obligatory on every officer who may be selected for it, and is considered as part of the general service which every officer who has graduated at West Point owes to the country; although practically those only are selected to whom the duty is not disagreeable. Limitation of the tenure of appointments to four years.

22. If it should be asked why the instructors are sent back to their regiments at the end of four years, when their services, if they are earnest men, must become more valuable to the institution with every fresh year's experience, the answer is—West Point is not intended only as a training school for cadets, but for the army and for the nation at large. The army generally derives great benefit from the rotation in which its officers, as instructors at West Point, are enabled to increase the knowledge previously acquired as cadets. The nation is also benefited. Many young officers acquire at West Point scientific knowledge and habits which cause them to be sought for important posts in civil life. Some obtain lucrative positions as professors in the different State universities. Some become connected with railroads, and other public improvements. In these cases the loss of the army is the gain of the public at large.

23. The selection of the subjects taught at the Academy, and of the text-books in the different branches, and the arrangement of the studies, are approved by the Secretary of War on the recommendation of the *Academic Board*, which is composed of the superintendent, the commandant of cadets, and the professors and chief instructors of the Academy. Selection of the subjects of study.

24. Each congressional or territorial district of the United States (*i.e.* each district entitled to return a member to Congress,) is by law entitled to have one cadet receiving education at the Academy. Section 3 of Instructions. Mode of admission to the Academy.

25. The nominations are made in each year by the Secretary of War, on the recommendation of the representatives in Congress of the several districts then unrepresented at the Academy, or whose representatives are about to quit the Academy. In addition to these, the President of the United States may nominate ten cadets in each year, to be selected

Section 3 of Instructions.

according to his own will and pleasure from the community at large.

26. In consequence of the results of the late civil war, many of the congressional districts of the Southern States are still unrepresented; and the number of cadets actually attending the Academy is 226.

Number of yearly admissions.

27. The number of vacancies at West Point in any one year varies according to the number of cadets who happen to complete their period of residence, and of those who, not having completed their term, are yet discharged as deficient in studies or discipline, as hereafter explained. The number of yearly admissions varies from about 56 to 70.

28. The date of admission in each year is the 1st July, and the candidate for admission is required to report in person to the superintendent before the 20th June, with a view to his qualifications being tested. But if sickness or any other unavoidable cause should interfere, he may present himself on the 28th August. Except at the two periods above named no admissions can take place.

Conditions of admission.

29. Candidates must be over 17 and under 22 years of age, except in the case of any candidate who may have served faithfully as an officer or enlisted man in the army of the United States either as a volunteer or in the regular service during the late civil war, who may be admitted up to 24 years of age.

30. Candidates must be at least 5 feet in height; free from any deformity, disease, or infirmity which would render them unfit for military service; and from any disorders of an infectious or immoral nature. They must be able to read and write well, and be thoroughly versed in the first four rules of arithmetic, in reduction, in simple and compound proportion, and in vulgar and decimal fractions.

31. Although the examination for entrance is not difficult, the prescribed tests, both medical and intellectual, are rigidly applied, and many candidates are rejected. In the present year, out of 52 candidates who presented themselves for examination, 17 were rejected, of whom 14 were from the Southern States, where the disorganization of society has been unfavourable to education.

32. The examination for entrance is not competitive, but simply a qualifying examination. The competitive system commences after a cadet is once admitted; it enters into every branch of instruction, and continues in full force to the end of his residence.

Section 4 of Instructions.

33. The length of the course of study, for all who may succeed in graduating, is four years; its nature is principally

professional, and the course of study is identical for all the students. The subjects are not all studied simultaneously, separate periods of the course being devoted to certain subjects, as shown by the time tables annexed. (Appendix A.)*

Section 4 of Instructions.

Length of the course of instruction.

34. The relative importance of the different subjects is indicated by the maximum marks of merit assigned to them respectively at the summing up of the results of each student's attendance at the end of his fourth year, according to the following scale:—

Subjects of study.

Subjects.	Maximum.	Period of Attendance.
Mathematics	300	2 years
Natural and experimental philosophy	300	1 year
Military and civil engineering	300	1 „
Chemical physics and chemistry	150	1 „
Ethics and law	150	1 „
French	100	2 years
Drawing	100	2 „
Spanish	75	1 year
Mineralogy and geology	75	1 „
Ordnance and gunnery	75	1 „
Infantry tactics (theory)	50	1 „
Artillery „ „	50	1 „
Cavalry „ „	50	1 „
Discipline	300	
General merit	2,075	

A synopsis of the course of instruction in each branch is annexed. (Appendix B.)†

35. Practical instruction in surveying; in fortification; in ordnance and gunnery, including the loading, pointing and firing heavy guns; in drill, or, as it is termed, the tactics of the three arms; in interior economy and regimental duty; forms an important part of the training of the cadet at different periods during his residence. In addition, the months of July and August in each year are entirely devoted to practical instruction, the battalion being then placed under canvas and relieved from all study.

Practical instruction.

36. During his first year a cadet receives instruction in fencing three hours in each week, from 15th October to 1st April.

During his second year he receives instruction in riding three hours in each week, from 1st November to 15th March.

Throughout the whole of his third academic year, from 1st October to 1st July, he receives instruction in riding, excepting between the 1st February and 15th April.

* Page 588. † Page 590.

Section 4 of Instructions.

Throughout the whole of his fourth academic year he receives instruction in riding three days in each week.

37. Swimming is not taught at the Academy. There is a good gymnasium for the use of the cadets in recreation hours, but the practice of gymnastics is purely voluntary.

Section 5 of Instructions.

38. The cadets are arranged in four distinct classes, corresponding with the four years of residence. Cadets of the first year constitute the fourth class; those of the second year, the third class; and so on.

Classification of the cadets for purposes of instruction.

39. Cadets are promoted from one class to another at the end of the academic year, 30th June, provided only that they shall have passed satisfactorily before the Academic Board in the examinations which are always held during June, failing in which they are either kept back in their then class for another year, or, in the case of decided deficiency, discharged from the Academy.

40. Each class is divided into sections convenient for instruction in the different branches of study. The method of division will be best explained by taking the fourth or lowest class as an example.

41. The members of the fourth class are, on their admission to the Academy, arranged in alphabetical order, and are then formed into sections averaging about 12 cadets for each branch of study. After the lapse of a month transfers are made at the close of each week from one section to another, according to the results of the past week's attendance in study, and so continue until those most advanced are found in the first section, the next in order in the second section, and so on.

42. During the first six months of residence cadets are on probation, and only receive their *warrant* as cadets provided they shall have passed satisfactorily at the January examinations held before the Academic Board, and that their conduct shall have been satisfactory.

43. Before receiving his *warrant*, each cadet is required to sign an engagement of service in the United States army for eight years, and to take an oath of allegiance to the National Government and Constitution.

Method of instruction.

44. The hours alloted to study in the time tables annexed (Appendix A) are divided nearly equally between attendance on the instructors in the halls of study—or *section rooms*, as they are termed—and independent study in quarters. The attendance in the section rooms is termed *recitation;* the independent study in quarters, *study.*

45. The theory is that during each recitation every cadet of the section attending it shall receive a thorough *vivâ voce*

examination illustrated on the blackboard, and there is not much practical variation therefrom. Where there is any departure from it, it arises from the number of cadets in a section being too large to enable them all to be examined during the same recitation, which lasts an hour and a half, or an hour, according to the subject. Recitations in mathematics, in natural and experimental philosophy, and in civil and military engineering, occupy one hour and a half; in all the other branches of instruction, only one hour. Thus, when it appears in the time table that a class attends mathematics, for example, from 8 to 11, it is to be understood that the sections forming one half of the class attend their respective teachers in the section rooms during an hour and a half, while the other half of the class is engaged in study in quarters. At the end of the first hour and a half those sections which have attended recitation return to their quarters to study, while their places are taken by the remaining sections which have been up to that time engaged in study in quarters. Section 5 of Instructions.

46. Each teacher, as a general rule, has two sections specially assigned to him for instruction, excepting the professor or head of each department who, as has been already explained, devotes his time to general superintendence, and takes the different sections for his personal instruction at such times and in such order as he may judge best.

47. Before proceeding to the section rooms the different sections parade in the barrack square by sound of bugle, under the superintendence of the cadet *officer of the day;* the roll is then called by the senior cadet, who is termed the *section marcher*, who reports absentees to the officer of the day, and marches his section off to the section room by direction of the latter. Arrived in the section room, the section marcher causes the cadets to take their seats in the order of their names on the roll, and then hands them over to the instructor. When dismissed by the instructor, the section marcher forms his section as before, marches it back to the barrack square, reports all infractions of discipline which may have taken place either in study or on the march to the officer of the day, and then dismisses his section by the latter's permission.

48. There is no system of private tuition recognized at the Academy. Each cadet must depend on his own exertions, aided by the explanations given by the instructors in the section rooms, and by the occasional assistance he may derive from his more advanced comrades. Private study.

49. The allotment of so large a portion of time to independent study is a great departure from the practice of

Section 5 of Instructions.

military schools in Europe; and it is a remarkable feature in the West Point system that no continued supervision is exercised over the cadets when studying in quarters beyond that which is supplied by the discipline of the cadets themselves. The senior of the two cadets inhabiting each room is responsible for discipline and orderly behaviour. The officer of the day (cadet) visits each room during the hours of independent study; and the *officer in charge*, who is detailed daily from the assistant instructors of tactics, also visits the rooms at his discretion.

50. It may be urged against this practice of independent study, that there is no security against a cadet idling away his time in place of studying, beyond that which is afforded by the ultimate incentives held out to diligence, and the fear of incurring the inevitable consequences of being noted as *deficient* either at the daily recitations or at the half-yearly examinations. But these considerations are found to be practically sufficient.

51. Another objection may, however, be urged with some show of reason, viz.: that a lad has no one at hand during so large a portion of the time allotted to study to whom he can apply for help or explanation to assist him in mastering the many points in a new subject which may occasionally puzzle a learner. He is thrown for the most part on his own resources; and although this has its advantage in cultivating self-reliance, it would seem that there must occasionally be a loss of valuable time resulting therefrom which can ill be spared.

52. The power of fluent conversation in modern languages is not acquired to any appreciable extent. Cadets translate simply from French or Spanish into English and *vice versâ*.

Section 6 of Instructions.

Routine of the day's work.

53. By the annexed table of the employment of time (Appendix A.) it will appear that excepting on Saturday, which is a half holiday from 1.30 p.m., there is very little time allotted to recreation on week days. One half hour between breakfast and the commencement of the first study; the same interval between dinner and the commencement of the third study; and the interval between 5 p.m. and sunset; are the only portions of time set apart for recreation out of doors.

54. A full-dress parade of the battalion takes place every day at sunset, after which the cadets are marched to supper, the hour of which varies with the season of the year, but is never earlier than 5.30 p.m. Half an hour after supper the evening call to quarters is sounded for study in barracks until tattoo at 9.30. All cadets excepting officers, the non-commissioned officers of the battalion staff, and the first

serjeants, must be in bed and their lights extinguished at 10 p.m. the hour for the signal of *Taps*. Section 6 of Instructions.

55. The arrangement of time on Sundays is as follows:

Breakfast at 7 a.m.
Full-dress parade and inspection at 8.
Call to quarters for *study in barracks* at 9.
Church call at 10.30.
Recreation after church.
Dinner at 1 p.m.
Recreation.
Call to quarters for study, 3 to 5 p.m.
After 5 p.m. the arrangement of time is the same as on a week day.

56. Cadets may obtain leave from the Sunday afternoon study in barracks to attend church a second time, should they desire it.

57. There is no yearly vacation. When a youth enters West Point, he is fixed there, unless discharged, for four years without intermission, with the exception of two months' furlough which he may obtain at the end of his second year on certain conditions, and which is subject to a scale of diminution graduated according to misconduct.

58. This discipline would be intolerably severe but for the relaxation afforded by the change from barracks and the section rooms to camp life. The battalion is encamped from about 20th June to 30th August, and during that period the time is exclusively devoted to military exercises, practical instruction, and amusement. A programme of the employment of time in camp is annexed. (Appendix C).*

59. The system of estimating proficiency in the different subjects studied is very elaborate. Each instructor keeps daily notes of the proficiency of the cadets forming the sections of which he has the charge; the degree of excellence shown by a cadet at any recitation being recorded by marks, 3 being the maximum for each lesson, which represents *thorough* proficiency; 2·5 signifies *good*; 2 *fair*; 1·5 *tolerable*; 1 *very imperfect*; anything below 1 is recorded as 0, or complete failure. Sections 7 and 8 of Instructions. System adopted for estimating proficiency in study.

60. A weekly report according to the annexed form (Appendix D),† showing the daily credit of each cadet and the aggregate for the week, is handed in by each instructor to the professor or head of his department at the end of the last study on Saturday, and the professor personally delivers the weekly reports of his department to the superintendent Weekly class reports.

* Page 594. † Page 596.

Sections 7 and 8 of Instructions.

at the office of the latter between the hours of 12 and 2 p.m. on the same day. The professor at the same time recommends such transfers of students from section to section as he may think proper. The aggregate weekly credits of each cadet in all the branches of instruction are then recorded in the superintendent's office.

61. From the weekly class reports referred to in the last paragraph, and the monthly record of discipline, the mode of keeping which is shown hereafter,* a consolidated report of the progress of the Academy is made up monthly and forwarded to the inspector of the Academy, who transmits an abstract of the same to the parent or guardian of each cadet.

62. The weekly class reports form the most important element in determining the relative standing of the cadets in their class at the period of graduation, but a verifying test, or corrective, is supplied by the examinations which take place in January and June, the method of conducting which is as follows:

Periodical examinations.

63. The January examinations commence on the 2d of the month. The examination of the 4th or lowest class is conducted by the whole Academic Board, the constitution of which has been already detailed.† The relative standing of the members of the fourth class, up to that time arranged alphabetically, is then determined by the summing up of the weekly class reports, verified or corrected by the results of the examination. A large proportion of the cadets of the fourth class, usually from one-sixth to one-eighth of the whole, are yearly pronounced to be *deficient*, and removed from the Academy at this their first examination, which on account of its importance is required to be conducted by the whole Academic Board. The examinations of the three other classes take place before committees of the Academic Board, the whole Board being divided into two committees for this purpose.

64. The June, or *annual* examinations, commence on the 1st of the month. The first or graduating class alone is examined by the entire Academic Board, and the final relative standing of the cadets determined. The remaining classes are examined before the two committees of the Academic Board.

65. The June examinations take place in the presence of the *Board of Visitors*, the members of which are specially appointed in each year by the President of the United States, and whose duty it is to report to the Secretary of War, for the

* See paragraphs 91 to 98.

† See paragraph 23.

information of Congress, on the state of discipline, instruction, &c., &c., of the Academy. Sections 7 and 8 of Instructions.

66. The senior assistant professor or instructor of the branch under examination is *ex officio* a member of the Academic Board or of the committee thereof which conducts such examination; and the immediate instructor of the section to be examined is likewise associated with the Board or its committee so far as relates to the examination itself and the arrangement of the section in order of merit.

67. To assist the Board in determining the accurate classification of any section about to be examined, the immediate instructor of that section hands to the Board, before the examination commences, a roll in the order of merit in which he considers the members should stand, based on the weekly credits which he had himself assigned. Classification founded upon the examinations.

68. At the close of the examination the same instructor hands to the Board a second roll in the order in which he conceives the members of the section should stand, judging by the result of the examination. The instructor then retires and the Board proceeds to deliberate.

69. Each member of the Board having kept careful notes of the examination, the relative standing of the cadets of a section in proficiency is determined by discussion.

70. The question next arises, who, if any, are to be pronounced *deficient?*—a dictum which inevitably entails discharge from the Academy, or putting down to a lower class.

71. The different sections composing the class having been arranged in one class list in order of merit; one of the Board, usually the professor of the department concerned, supposing *e. g.* the class to consist of 50 members, may move that No. 50 be declared deficient. If the motion is negatived on discussion, the salvation of No. 50 proves also the salvation of all standing above him. But if the motion be carried, Nos. 49, 48, 47, &c., may be pronounced deficient in like manner, and so on, until a number is reached which is not condemned.

72. The examinations are entirely *vivâ voce.* Each cadet is subjected to a searching oral examination of from seven to ten minutes, illustrated on the blackboard where the subject admits of it. The daily record of the proficiency of a cadet in any subject forms, as already stated, by far the most important element in fixing his relative standing among his classmates: it is only exceptionally that the public examinations alter materially the order of merit which has been previously framed from the weekly class reports.

73. At the close of each examination the Academic Board reports to the Secretary of War the names of all cadets who Dismissal for want of proficiency in studies.

Sections 7 and 8 of Instructions.

are pronounced deficient in studies or discipline, to be discharged from the Academy unless otherwise recommended by the Academic Board.

74. The rule of discharge for deficiency even in one solitary subject is very rigidly enforced; unless where exceptional circumstances, such as loss of time on account of illness, or having been unavoidably prevented from joining the Academy until some time after the rest of his class, induce the Board to recommend that the cadet shall have another trial by being put back to the next lower class.

Influence of the periodical credits on the final result.

75. Some detail is necessary to explain how the marks obtained by a cadet at the daily recitations are employed to determine the credit he is to receive in any given branch of study at the period of his graduation.

76. Where a subject is studied for two years, the maximum time allotted to any branch of study, the marks gained during the first year help only to fix a cadet's relative standing in his class for the year next ensuing. The credits shown by the weekly class reports of the second year alone are taken into account in determining the credit due to a cadet at the end of his residence.

77. The exact method of fixing the credits due for any one subject is as follows. The professor makes out a roll of the class in the order of merit finally fixed by the Academic Board at the June examinations. The first on the roll then receives credit for the maximum number of marks allotted to the subject; the last on the roll receives a credit of one-third of that maximum only. The *common difference* for all the members of the class between those limits is then calculated, and the remaining members receive credits varying from the first cadet and from each other by the amount of that common difference. The figures thus determined represent the credits assigned for any one subject at the period of graduation, and the figure of general merit for each cadet is made up of the aggregate credits obtained by him for all the branches of study, with one column included for discipline.

Influence of proficiency in drill and riding.

78. Proficiency in drill or riding does not affect the figure of general merit, except indirectly. Inattention or carelessness at these exercises would be noted by a certain figure of demerit, and would thereby diminish, as will be hereafter explained, the credit to be allotted for discipline at the final examination.

Graduation.

79. The qualifications required for obtaining an appointment to the army are simply *graduation*, or in other words that a cadet shall have passed through the four years' course at the Academy without being found *deficient* in any one

branch of study or in discipline. The proportion of cadets who fail to graduate is very considerable—nearly one half. The present first class is a fair sample. It numbered 74 on entrance, and its members are now only 39, and of these three had belonged to the next higher class, and were put back for deficiency. From 1842 to 1852 the exact proportion who succeeded in graduating was 0·510. From 1852 to 1862 the exact proportion was 0·523.

Sections 7 and 8 of Instructions.

Proportion of failures.

80. Although the ultimate consequences of idleness in being declared *deficient* at the half-yearly examinations are generally sufficient to ensure diligence, an immediate penalty is attached to any adverse report against a cadet for want of attention to study, or any misconduct in the recitation halls. The instructor of any section notes on his weekly class reports any cases of decided idleness and all infractions of discipline, and to each reported instance a double penalty is attached, as to every instance of misconduct at the Academy; the one immediate, in punishment according to the scale of the offence; the other prospective, consisting of a certain figure of demerit, which will rise up in judgment against the delinquent at the end of his residence, and diminish his credit for *discipline*.

Section 9 of Instructions.

Penalties attached to idleness.

81. The *certainty* of the penalty which attaches to idleness, both in the immediate punishment it entails, and its more serious ultimate consequences, is found to be sufficient, as a general rule, to attain the desired object; hence the character of the cadets for diligence is decidedly high.

82. The members of the graduating class have their choice of the services to which they shall be appointed according to their standing on the roll in order of merit. The order of precedence of corps of the United States army is:—

1. Engineers,
2. Ordnance,
3. Artillery,
4. Cavalry and infantry;

and that is, as a general rule, the order of choice. The Secretary for War may sanction subsequent transfers from one branch of the service to another, but such transfers are very rare.

Inducements to industry offered by choice of service.

83. Beyond the privilege of choice, the only direct inducement held out to distinction among his classmates to any cadet is one which is purely honorary. By an order from the Secretary of War so early as the year 1818, the five cadets most distinguished in studies and discipline in each class at the June examinations are published each year in the United States Army Register (Army List). The distinction is highly prized.

Honourable mention.

Section 10 of Instructions.

Small material advantages resulting from graduation at West Point.

84. The advantages resulting from a degree or peculiar distinction at West Point after appointment to the army, in respect to professional advancement or the obtaining staff employment, are very small. No special qualification is required by law or regulation for admission to the staff. When a vacancy occurs any one who desires may make application for the vacant appointment to the Adjutant General of the army. The decision rests with the Secretary of War or the President. The head of the department in which the vacancy exists is the proper person to insist, if he thinks proper, on the possession of certain qualifications by the officer who is to be employed as his subordinate. Even graduation at West Point is not insisted on as a necessary qualification for staff employment.

Section 11 of Instructions.

Discipline.

85. Every young gentleman who passes his probationary examination in the January after his admission receives his *warrant* of *cadet*, and signs an engagement to serve in the military force of the United States during the eight years next ensuing. He thus becomes amenable to the Articles of War and to trial by court-martial.

86. The discipline of the Academy has no resemblance to that of an ordinary civil college, but is peculiarly and essentially military. The cadets are required to clean their own rooms, make their own beds, and clean their own arms and belts.

87. As already stated, the staff for the maintenance of discipline is distinct from that of tuition. The professorial staff simply report infractions of discipline in study, but have no power to punish. All professors and instructors, however, as well as all military officers who may be stationed at West Point, are expected to report to the superintendent any improper conduct on the part of a cadet which may come under their observation.

88. The selection of cadet officers and the principle of such selection has been already explained.*

Punishments.

89. The punishments to which a cadet is liable are comprised in the three classes following, viz.:—

1st. Privation of recreation, &c.; extra duty (not guard); reprimands; arrests or confinement to barrack room or tent; confinement in light prison. *Inflicted only by the superintendent or by his authority.*

2nd. Confinement in dark prison. *Only by sentence of court-martial, and seldom or never resorted to.*

3rd. Suspension; dismissal with privilege of resigning;

* See paragraphs 13, 14.

public dismissal. *Only by sentence of a garrison or general court-martial, which must be approved by the Secretary of War.* Section 11 of Instructions.

90. "Breach of arrest" is treated as a military offence of the worst nature, and is classified with "mutinous conduct."

91. All offences are classified under five heads, and are recorded according to the following scale:

An offence of the	1st	class counts	-	5 demerit.
„	2nd	„	-	4 „
„	3rd	„	-	3 „
„	4th	„	-	2 „
„	5th	„	-	1 „

92. A table of characteristic specimens of offences classified as above, is appended (Appendix E).*

93. All offences reported or to be reported against cadets are read out at evening parade on the day after commission, excepting offences in the section rooms reported by the instructors, which are read out on Monday evening's parade; so that every cadet may have the opportunity of presenting a written explanation, or plea in extenuation, of the offence charged against him. Procedure in the infliction of punishments for offences.

94. The commandant of cadets attends at his office, in the square of the cadet barracks, between the hours of breakfast and the first study every morning to receive reports of offences.

95. Explanations in writing, on paper of prescribed uniform size, may be taken to the commandant by any cadet charged with an offence not later than the commandant's second orderly hour after publication, as a general rule from which any departure requires to be explained.

96. If the commandant considers the excuse satisfactory, he erases the offence and tears up the excuse, but forwards an abstract of all offences which have not been explained to his satisfaction, with the written explanations, for the decision of the superintendent.

97. The superintendent may, on further inquiry, find the explanations of some of the offences forwarded satisfactory, in which case he erases such offences. To the remainder he allots such immediate punishment, and such marks of demerit in addition, as the cases respectively justify; or he may consider the demerit marks sufficient without any immediate punishment.

98. A copy of one of the daily abstracts of offences with their accompanying explanations, forwarded by the commandant to the superintendent, with the decision of the latter, is annexed (Appendix F).†

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* Page 596. † Page 598.

Section 11 of Instructions.

99. Thus the offences of which a cadet may be guilty during his residence are recorded against him by a very elaborate and just method, and rise up against him at the period of his graduation. It will be seen on examination of the abstract (Appendix F) referred to in the next preceding paragraph, that no instance of carelessness or inattention to orders is too trifling to be taken notice of.

Dismissal for misconduct.

100. If any cadet has more than 100 demerit recorded against him in any six successive months, he is immediately discharged from the Academy as deficient in discipline.

101. But during the first year's residence, offences count one third less than those committed during the subsequent three years; a cadet of the first year would therefore only be discharged as deficient in discipline who had obtained a demerit of 150 within any period of six successive months.

102. The marks of demerit of all the fourth class cadets who have not proved deficient in discipline, are wiped out entirely at the end of their first year, and do not therefore affect their relative standing at the period of graduation. The demerit of the first year is only taken into account, so as to determine, in combination with the credits received for progress in study, the relative standing of the cadets in their class for the year next ensuing.

Credit allowed to conduct at the final examination.

103. At the final examination, the credit to be allotted to any cadet on the score of discipline is made up by means of the demerit rolls as follows.

104. Each cadet receives a credit of 16·67 for every month during his residence, in which he has had no demerit recorded against him, to be deducted from his aggregate marks of demerit at the end of his residence. The monthly credit is fixed at 16·67, because that number forms the sixth part of the 100 marks of demerit, which if recorded in six months against any cadet would have occasioned his discharge.

105. Notwithstanding that the demerit marks of the fourth class are wiped out at the end of the first year, and do not count against the cadets at their final examination, the credit of 16·67 is still allowed to cadets for every month of their first year in which no demerit was recorded against them and deducted from their aggregate marks of demerit at the end of their residence.

106. The positive marks of merit for discipline due to any cadet at the end of his residence are thus determined. The cadet of the graduating class having the lowest aggregate demerit recorded against him is placed *first* in discipline, and is credited with the maximum of marks due to that subject, viz., 300. The whole class is then arranged in the same

sense, the cadet having the highest demerit being placed last, and receiving only one third of the maximum, viz. 100. The common difference between these limits is then calculated for each cadet of the class, and applied as already explained.* Section 11 of Instructions.

107. Although the nominal value placed on discipline is represented by the same number of marks only as are allotted to each of the more important branches of study, in fixing the relative standing of cadets at their final examination; it should be remembered that no candidate can reach that period at the Academy who is not fairly well conducted. It would be quite impossible for any cadet to remain at the Academy who had earned for himself the sentence "deficient in discipline," even though the marks of demerit required for that sentence might have been earned by a succession of minor infractions of discipline. And a cadet who might be guilty of any serious wilful offence would be at once removed from the Academy. Importance attached to discipline.

108. The disciplinary code is thus seen to be very severe, more so probably than at any European school or college. It is, moreover, inflexibly enforced; and the more easily that it is supported by public opinion among the cadets themselves, with whom a high sense of honour, as well as a high estimate of the obligations of military duty, are sedulously inculcated. The undersigned has satisfied himself by careful inquiry in his intercourse with cadets in two different visits to West Point, that it is in the public opinion of the Academy disgraceful on the part of a cadet to tell a falsehood, either to screen his friend or himself from punishment, and that any one known to have done so would be cut by his comrades unanimously. The consequence—and, perhaps, equally a cause—is that the officers of the Academy invariably give a cadet credit for telling the truth in any statement he may make in explanation of an offence charged against him, until the contrary is proved. Honourable feeling among the cadets.

109. Drunkenness is almost unknown, and would entail immediate dismissal from the Academy.

110. In short, the moral tone and gentlemanlike feeling existing among the cadets are of a high order; their *esprit de corps* is strong, and if there is one word which characterises better than another the mode in which all the duties of the Academy are conducted, it is *smartness*, whether on or off parade.

111. Owing to the very limited time allowed for recreation, Absence of athletic sports.

* See paragraph 77.

Section 11 of Instructions.

games are almost unknown; and almost the only athletic amusement indulged in is boating on the river, for which, however, Saturday afternoons afford the only available time.

System of discipline uniform for all.

112. No difficulty is found to arise from the difference of age among the cadets in maintaining an uniform system of discipline. The same rules are applied to all during the whole period of residence.

113. The cadet officers and non-commissioned officers greatly assist in maintaining discipline. A reference to the daily abstract of offences annexed (Appendix F) will show that out of 15 offences recorded therein, 11 were reported by cadet officers or non-commissioned officers.

Assimilation of duties to those of a regiment.

114. The daily duties are assimilated as much as possible to those of a battalion in quarters, and are as follows:

Duties of the officer in charge.

115. *The officer in charge*, detailed daily from the assistant instructors of tactics, is responsible for the proper performance of all the military duties of the battalion during the day. His tour of duty commences at guard mounting (7.30 a.m. in barracks, 8 a.m. in camp), at which time he reports for orders to the commandant at the office of the latter. He has an office adjoining that of the commandant where he must constantly be present from *reveillé* to *taps* (the signal for putting out lights at 10 p.m.), except when absent on duty or at meals. He is present in the cadets' mess hall during all meals, and superintends every parade and roll call. He visits the sentries at his discretion. On being relieved, he includes in the usual morning report of his company, all offences which may have come to his knowledge as having occurred during his tour of duty.

Officer of the day.

116. *The officer of the day*, is detailed usually from the roster of the cadet officers, although every cadet of the highest class is appointed at least once to perform this duty. He is present at guard mounting and receives over his guard in the usual military manner, after which he reports for orders to the commandant and is generally under the orders of *the officer in charge*. His post of duty is the guard room, which is in the same building as, and immediately beneath, the offices of the commandant and the officer in charge. He causes all calls to be sounded at the proper times; is present at all parades and roll calls; and receives reports of all absentees, whom it is his duty immediately thereafter to seek and to order when found to repair to their respective duties unless properly excused. He reports to the officer in charge all absentees whom he may not be able to find, and all cadets who fail to obey his orders. He directs the formation of all the class sections before marching to the section rooms;

receives reports of absentees from the section marchers, and requires the latter to march off their sections in a proper military manner. He is responsible for the suppression of all irregularities in quarters or their vicinity during his tour. He visits the quarters during the hours of independent study and receives reports of absentees. He visits all the quarters at *Taps*, and reports absentees to the officers in charge. He afterwards visits the room of every cadet absent every 15 minutes until the return of the absentee, or until otherwise directed by the officer in charge. On the back of the guard report which he forwards next morning to the commandant, he records all offences which come to his knowledge as having occurred during his tour; and presents with it all permits and passes that have come into his hands. (All permits and passes are required to be deposited with the officer of the day.) The officer of the day is relieved from study during his tour of duty. Section 11 of Instructions.

117. *Daily Guard.*—A cadet guard, consisting of one serjeant, four corporals, and 24 privates, is mounted every morning at 7.30. The cadets of the guard remain in the guard room during the day, excepting the hours of study. Daily guard.

118. *Sentries* are posted during the hours of recreation, the most important posts being the different entrance halls of the cadet barracks. Ten minutes after the *call to quarters*, during the day on Sundays, and every evening, it is the duty of each such sentry to visit all the rooms belonging to his particular entrance hall. He then orders all cadets whom he may find visiting in rooms not their own to their proper quarters, and reports all who fail to comply promptly with his orders to the serjeant of the guard, as well as all absentees; and the serjeant of the guard passes on all such reports to the officer of the day. A sentry similarly reports every irregularity that may occur on his beat, and particularly the name of any cadet who may have absented himself from the barracks for more than ten minutes. A high sense of the honourable confidence reposed in a sentry seems to be generally entertained; and there is every reason to believe that the cadet sentries at West Point perform their duties in a trustworthy and satisfactory manner. Sentries.

119. The general duties of the battalion are assimilated as much as possible to those of a battalion in quarters. The daily detail of duties is drawn up by the cadet adjutant. The cadets for guard are detailed by the first serjeants of their respective companies at each evening parade. Orderlies of companies are likewise detailed; and the daily routine is in this respect as nearly as possible the same as that of military life.

120. *Indulgences.*—There is no yearly vacation; and the

Section 11 of Instructions.

Conditions necessary for obtaining leave of absence.

furlough which each cadet may obtain at the end of his second year is subject to the following conditions, viz.:—

1st. If he has obtained 350 demerit in the two preceding years, he is detained 12 days; if 325, 300, 275, 250, or 200 demerit within the same period, he is detained ten days, eight days, five days, three days, or two days respectively.

2nd. He is required to sign a certificate, declaring that he has *in no manner improperly interfered with, or molested or injured, new cadets.* The furlough of any cadet declining to sign this certificate is limited to one month, from 28th July to 28th August. Although there have been instances of cadets declining to sign this certificate, it is probable that, as a general rule, the cadet conscience places a liberal interpretation on the words of the formula.

121. Leave of absence from the Academy for one to two days is occasionally granted, but only for exceptional reasons.

Section 12 of Instructions.

Description of the Academy buildings.

Cadets' quarters.

122. The cadet barrack is a handsome stone building of four stories. It contains 176 rooms, of which 136 are cadets' quarters, 14ft. by 22ft., arranged in eight divisions, each division having its own entrance, and having no interior communication with the other divisions. Not more than two cadets are lodged in the same room. The two beds in each room are curtained off from the room, and separated from each other by a partition. There are numerous bathing rooms in the basement, to which the cadets have access.

123. Each division of quarters is under the superintendence of an assistant instructor of tactics, who visits the rooms of his division three times in the course of each day, and occasionally during the night. He makes a daily report in writing to the commandant of the condition of the rooms under his charge, noting all delinquencies that may have come to his knowledge since his last report.

124. A division of quarters is divided into two *subdivisions of quarters* of two floors each, each subdivision being under the charge of one of the cadet officers, who has his quarters therein, and who is responsible for the discipline of his subdivision, and for the proper fulfilment of all orders that may be issued relative to the police of quarters. He visits all the rooms of his subdivision 30 minutes after reveillé, and immediately after *taps* (lights out), notes all irregularities, and makes a daily report in writing to the superintendent of his division, recording all delinquencies, and certifying that since the report of the previous day he has faithfully performed all duties required of him as *inspector of subdivision.*

125. A copy of "Special Regulations for Barracks" is annexed (Appendix G).*

* Page 601.

126. The *Academy* is a building detached, containing the following rooms and departments, viz.:— Section 12 of Instructions.

Chemical department, comprising laboratory, lecture-room, room for electrical experiments, and a work room; *fencing department; gymnasium; mineralogical collection; engineering department*, comprising drawing and model rooms; *artillery model room; mathematical model room; drawing academy; trophy room; picture and statue galleries; mineralogical section rooms;* and 10 *recitation rooms* (or halls of study). The Academy.

127. Another detached building contains the *observatory;* and *library* of 20,000 volumes, to which the cadets have access at stated times.

128. There are no rooms specially set apart for day rooms, reading or recreation rooms.

129. The *mess hall* is a detached building. The central hall where the cadets take all their meals is 96 feet by 46 feet and 20 feet high. Quarters for the purveyor with kitchen and bakery, and with quarters for the necessary servants in the basement, are attached. Mess hall.

130. The cadets are formed in the barrack square previous to each meal, and are marched to and from the mess hall. The officer in charge visits the mess hall at all meal times. The senior cadet officer present is responsible for good order.

131. The Academy is entirely supported by the State. The average annual cost for 62 years has been 137,315 dollars, or about 28,000*l.* sterling; and this sum includes the cost of all buildings and structures, of repairs and maintenance. The yearly appropriations during the last eight years have varied between 35,000*l.* and 40,000*l.* sterling. Section 13 of Instructions. Annual expense of the establishment.

132. A new cadet is admitted to the Academy on the 1st July. From that date he is credited with Government pay at the rate of 30 dollars (about 6*l.* sterling) a month, which allowance is calculated as sufficient to pay for the whole cost of his equipment and maintenance. As the monthly pay is, however, small compared with the first cost of uniforms and outfit, a new cadet usually deposits with the treasurer of the Academy on entrance from 60 to 80 dollars (12*l.* to 16*l.*) to be credited to his account. Thenceforth all wants and necessaries are supplied to the cadet by the Government, the prices being a trifle above cost and charged against his account. At the end of his residence, a balance is struck, and the sum standing to his credit, if any, is paid over to him. It is possible by this arrangement for a very careful and steady lad to secure his education, his main-

Section 13 of Instructions.

tenance during four years, a position in the army, and 100 dollars in addition, at the time of his graduation.

133. In a comparatively young community the aid thus afforded by the State has been of immense value. Not one out of 20 of the officers of the army possess any income or means of support beyond their regular pay and emoluments: and the records of the Academy, based on careful statistics as to the condition in life of the parents of the cadets during the last 22 years, show conclusively that not more than one out of eighteen of those admitted during that period could have received, without the public aid, more than a common English school education.

Section 14 of Instructions.

134. The principal officers and professors of the Academy hold strong opinions in favour of the sufficiency of the course of instruction, of the maintenance of discipline, and of the general working of the arrangements of the institution.

Favourable opinion of the arrangements of the Academy.

Section 15 of Instructions.

135. The general character of the officers who have passed through West Point stands remarkably high. There is no doubt that graduation at the Military Academy invests an officer with a moral status and consideration in the opinion of the army at large which those who have not been educated at West Point do not possess. The feelings entertained by former cadets towards the Academy after having entered the army are very warm; and this could hardly be otherwise. The process of elimination to which the cadets of any one class have been subjected has been so searching, and the ordeal through which graduates have passed has been so severe, that a diploma from West Point is regarded as a high honour not only by the army but by the nation at large, a distinction which the *amour propre* of the successful graduates is closely concerned in upholding at its full value. In the words of General J. G. Barnard of the United States Army, "as "disbursing officers of the Government they (the graduates "of West Point) have proved faithful when too many not "graduates have failed. As engineers they have commanded "the entire confidence of the Government and the commu- "nities which they served, and have been the principal agents "by which our fortifications, our works of public improve- "ment, our railroads, canals, public buildings, and our light- "houses and harbour works have been brought into existence. "In the ranks of our legislators, our jurists, our agriculturists, "our merchants, our ministers of the gospel even, they have "been found and have ever acquitted themselves with honor, "and commanded their full share of respect from their "fellow-men." What is claimed for the training at West Point by its advocates is, not that it necessarily turns out

High character of the officers who have graduated at West Point.

brilliant men, but that it prepares for the service of the State a number of educated men who may be depended on, as a general rule, to serve it faithfully and ably in many different useful capacities. Section 15 of Instructions.

136. It has already been stated that officers of all arms of the service are educated at West Point; but no means are taken for ensuring the possession of special qualifications by officers of different branches of the service beyond those contained in the course of instruction which is the same for all. Section 16 of Instructions. West Point a preparatory academy for all branches of the service.

137. The principle on which appointments are made to the various arms has already been explained,* as well as the extent to which officers can be transferred from one branch of the service to another.

138. The only advantage claimed for the system of having one general place of instruction for all arms, in preference to special colleges for different branches of the service, is that of comparative cheapness. The fact is that the Academy of West Point, though nominally *military*, is looked upon as a nursery for the education of civil servants of the public almost as much as for that of military officers. Indeed the prizes drawn by the graduates as a consequence of their training at West Point, are most of them *civil*. And the conclusion can hardly be resisted that as a military institution it is a failure in one most essential feature, viz.: that a cadet in after life derives little advantage from his diploma so far as concerns the obtaining of the prizes of the military profession. The knowledge acquired must always have a positive value; and where opportunity occurs it will in most cases probably lead to distinction, as has been proved during the late civil war; but the encouragement held out by the State to distinction at West Point, so far as regards advancement in the army, falls very far short of what, in good policy, it ought to be. Partly also a training school for the civil services. Disadvantages in the latter respect in a military point of view.

139. There is no practical training required after leaving the Academy for young officers of the artillery or engineers. There is no academy for the special education of staff officers; and admission to the staff is subject to no conditions as to qualification, either by law or regulation. No separate education for the special arms.

P. L. MacDougall, Colonel.

London, January 20, 1869.

* See paragraph 82.

APPENDICES.

APPENDIX

TO THE

ACCOUNT OF THE SYSTEMS OF MILITARY EDUCATION

IN

FRANCE AND PRUSSIA.

APPENDIX A. (POLYTECHNIC SCHOOL.)

Tables showing the Employment of Time at the Polytechnic School.

Weekly arrangement of Studies, &c. during the Winter portion of the Session of 1868-9.

Table I. *Second Division.* (*First Year's Students.*)

	6	6.30	8.30	9	10.30	11.30.	1	2	2.30	5	6	7	9
Monday - -	Rise at six.	Roll call at half-past six.	Breakfast.	Lecture on Geometry.	Study on the Lecture.	Lecture on Chemistry.	Study on the Lecture.	Dinner.	Recreation.	Lecture on French Literature.	French Composition or Study.		Supper at 9, Roll call in the dormitories at 10 on Wednesdays and Sundays, and at half-past 9 on other days. Lights out half an hour after roll call.
Tuesday - -				Lecture on Analysis.	Study on the Lecture.	Study or Drawing.				Study, German lessons and *Interrogations particulières.*	Figure and Landscape Drawing.		
Wednesday - -				Study or drawing.		Lecture on Physics.	Study on the Lecture.			Leave of absence till 10 p.m.			
Thursday - -				Lecture on Analysis.	Study on the Lecture.	Chemical Manipulations or Drawing.			Drill, Fencing, or	Study, German lessons and *Interrogations particulières.*	Study.		
Friday - -				Lecture on Geometry.	Study on the Lecture.	Study or Drawing.				Study, German lessons and *Interrogations particulières.*	Study	Lecture on History.	
Saturday - -				Lecture on Analysis.	Study on the Lecture.	Study or Drawing.				Study, German lessons and *Interrogations particulières.*	Figure and Landscape Drawing.		
Sunday - -		General Study or Drill.	Breakfast	Leave of absence till 10 p.m.									

APPENDIX A.

Polytechnic School.

TABLES SHOWING THE EMPLOYMENT OF TIME AT THE POLYTECHNIC SCHOOL.

Weekly arrangement of Studies, &c. during the Winter portion of the Session of 1868–9.

Table II. *First Division.* (*Second Year's Students.*)

	6	6.30	8.30	9	10.30	11.30	1	2	2.30	5	7	9
Monday - -	Rise at six. Roll call at half-past six.		Breakfast.	Lecture on Mechanics.	Study on the Lecture.	Lecture on Physics.	Study on the Lecture.	Dinner.	Recreation.	Study, German lessons and *Interrogations particulières.*	Figure and Landscape Drawing.	Supper at 9. Roll call in the dormitories at 10 on Wednesdays and Sundays, and at half-past 9 on other days. Lights out half an hour after roll call.
Tuesday - -				Study or Drawing in the *Salles d'étude.*		Lecture on Architecture.	Study on the Lecture.			Study, German lessons and *Interrogations particulières.*	Study.	
Wednesday - -				Lecture on Mechanics.	Study on the Lecture.	Lecture on Chemistry.	Study on the Lecture.			Leave of absence till 10 p.m.		
Thursday - -		General study (*étude libre*) in the *Salles d'étude.*		Lecture on Analysis.	Study on the Lecture.	Chemical Manipulations or Drawing.			Drill, Fencing, or	Study, German lessons and *Interrogations particulières.*	Study / Lecture on History	
Friday - -				Lecture on Mechanics.	Study on the Lecture.	Study or Drawing.				Lecture on French Literature.	Figure and Landscape Drawing.	
Saturday - -				Lecture on Analysis.	Study on the Lecture.	Study or Drawing.				Study, German lessons and *Interrogations particulières.*	French Composition or Study.	
Sunday - -		General study or drill.	Breakfast	Leave of absence till 10 p.m.								

APPENDIX B.

SCHOOL OF APPLICATION FOR THE ARTILLERY AND ENGINEERS AT METZ.

Programmes of the Courses of Instruction.

Note.—At the time the School of Metz was visited new courses of artillery and of applied mechanics were in process of preparation, but did not exist in print, and therefore could not be obtained. The old courses, which have in many parts become obsolete (especially the course of artillery), are those given in the Appendix to the Report of the Commissioners of 1856.

I.—COURSE OF PERMANENT FORTIFICATION AND OF THE ATTACK AND DEFENCE OF FORTRESSES.*

Division of the Course.

		Number of Lectures.	
		Artillery.	Engineers.
1st Part. Principles of the art of fortification.	1st Section. Fortification on level ground	29	29
	2nd Section. Fortification on irregular ground	11	15
	3rd Section. General questions connected with fortification	5	6
2nd Part. History of fortification		14	14
3rd Part. Attack and defence of fortresses		20	20
	Total	79	84

First Part.

Principles of the Art of Fortification.

Section I.

(i) *Fortification on a level site.*

Lecture 1.—General principles of the construction of a fortified *enceinte*. Continuity of the obstacle. Strength of the profile; flanking; difference between a fortress and a fortified military post. Use of the bastion trace to fulfil the conditions of flanking, without, however, excluding absolutely the other forms of fortification.

* Translated by Captain H. Schaw, R.E., Professor of Fortification and Artillery at the Staff College.

APPENDIX B.

Artillery and Engineer School at Metz.

Names of the different parts of the bastioned front; form of the parapet; advantages of an earthen parapet; thickness which is necessary; inclination of the superior slope; exterior slope; berm, its breadth cannot be constant in certain cases. Interior slope; banquettes for infantry and artillery; slope of banquettes; terre-plein of the rampart; interior slope of rampart; road round the ramparts; slopes of masonry revetments.

Lecture 2.—Relation between the relief of the flanks and the length of the curtain, in the case of a dry ditch. Minimum length of curtain; length and direction of flanks; length of lines of defence; necessity of flanking by musketry; direction of faces; maximum and minimum lengths of exterior side usually adopted; advantages of long curtains.

Maximum diminished angle, and minimum of the flanked angle or of other salient angles, whether constructed in masonry or in earth.

Modifications of a bastioned front due to a wet site. Advantages of a revetted escarp in the case of a wet ditch; necessity of this obstacle in country where the obstacle formed by the water may be nullified by frost. Minimum height of scarp above the water; influence of this height on the minimum length of curtain, on the length of exterior side, and on the other elements of a front.

Modifications of which a front is susceptible in the case of an outwork.

Lecture 3.—Any one of the construction lines of a front can be taken as the basis of the trace, but it is most convenient generally to work from the exterior side.

Principal methods of constructing the trace according to data of the question.

Trace determined by the minimum of curtain; by the maximum of curtain corresponding to lines of defence of a given length; by the condition of having faces and flanks of given lengths.

Propriety of *not* adopting a general trace for all cases, and modifying it according to circumstances.

The preceding principles applied to the trace of a front taken as an example. *First study of a front of fortification.*

Determination of the command of a fortification; heights to be given to the magistral lines in order to cover the escarps from the curved fire of artillery; slope to be given to the crests of the bastions; conditions by which the slope may be determined; barbettes to be constructed in certain cases at the salients of bastions.

Ditches, their double object; dry and wet ditches; ditches which may be either wet or dry at the pleasure of the defenders. Width of these different ditches.

Masonry counterscarps; their importance has become greater owing to modern improvements in artillery; propriety of giving the counterscarp a great height; rounding the counterscarp at the salients of the bastions.

Lecture 4.—Definitions of exterior works; outworks; conditions which should be satisfied by them; commands of the different parts of a fortification; command of fire over the possible works of a besieger, and defensive command or defilade.

Principal outworks of a front; ravelins, counterguards, their uses, their defects. Importance of counterguards as a means of covering the escarps of works against the plunging fire of artillery.

Breadth of ditches of ravelins and counterguards according as they are wet or dry. The revetment of the escarps is not indispensable, and still less is it necessary for their counterscarps.

Comparison of the relative value of counterguards and ravelins.

Tracing of the ravelin. Maximum saliency which should generally be allowed for this work. It need not always be placed symmetrically with reference to the capital of the front.

Tracing of a counterguard placed in front of a bastion. This work ought as far as possible to be flanked by the body of the place. Thickness which should be given. Counterguard in front of a ravelin; when it should be employed; its trace; its organization. Covered ways, their uses.

Lecture 5.—Outworks accessory to a front; tenaille, its uses; it has acquired a greater value of late as a covering mass; it may be revetted or not according to circumstances; sometimes it is only of value to cover a postern.

Reduit of the ravelin; its uses; its defects; its faces should be parallel to those of the ravelin; use of the flanks of this work.

Reduit of the re-entering place of arms, revetted and unrevetted; its uses, its inconveniences; loop-holed tambour. Usually, in practice, reasons of economy lead to the adoption of a simple earthwork.

Coupure; its uses, its defects; may be replaced advantageously by a traverse.

Unity which exists, in a front on the first system studied, between the reduit of the ravelin and those of the re-entering places of arms.

Command of the ravelin; slope to be given to its crest lines; its magistral may be kept horizontal. Detailed trace of this work. Determination of the length of its faces, by the condition that the ditch of one of the faces of the reduit of the re-entering places of arms should be flanked by the reduit of the ravelin.

Limit of the width of the terre-plein of the ravelin. Earthen slope which connects each of its branches with the mask formed in front of the flanks of its reduit.

Height of the escarp of the ravelin; width given to its ditch.

Lecture 6.—Trace of the magistral lines and of the gorge wall of the reduit of the ravelin; command of its magistral lines; height of its escarp. The ditch of this work should be separated from that of the body of the place. Command of the crests; their trace; high and low terre-pleins; organization of these terre-pleins. Stair at the gorge of the reduit of the ravelin. The counterscarp of this work is not revetted; advantages of this arrangement; trace of this counterscarp.

Lecture 7.—Command and detailed trace of the tenaille; revetted tenaille; profile of its parapet; traverses at its extremities; defilade of its terre-plein; trace of its gorge.

Unrevetted tenaille; revetted traverses at its extremities.

Double caponnière in front of the tenaille; organization of its glacis; stairs leading to the terre-plein of the tenaille.

Lecture 8.—Covered ways; considerations fixing the extreme limits of their command; general trace of the covered way of the ravelin: re-entering place of arms; its organization; traverses in the covered way; their use, their defects; intervals to be left between them; organization of the passages round the traverses; they may be covered by indentations in the glacis, either in the form of crotchets, or en crémaillères. Trace of the crotchets; arrangement of traverses to oppose the enemies' lodgments at the salient place of arms.

Details of the commands of the different parts of the covered way; defilade of this work; its organization in successive redans favours a step by step defence.

Lecture 9.—Covered way of the bastion; organization of the glacis of the counterscarp; uses of this glacis, and its importance as a means of covering the escarps of works in rear from the plunging fire of artillery;

trace en crémaillère; changes to be made in the trace of the covered way when the counterscarp of the ravelin is not revetted.

Lecture 10.—Glacis. Their surface ought to be exposed to a grazing fire from the covered way, a direct fire from the works in rear, and a reverse fire from the collateral works; influence of these fires on the nature, the developement, and the rapidity of the execution of the besiegers' works; conflicting conditions thus resulting for the glacis; means of reconciling them according to circumstances; planes of adjustment; conditions which should be satisfied by them.

Glacis *coupés* (*i.e.* ending in a steep slope); they should only be employed in exceptional cases. Curved glacis, their inconveniences; one should avoid multiplying the planes of the glacis; trace of the glacis of a front, on the first system studied.

Lecture 11.—Detailed trace of the reduit of the re-entering place of arms; revetted and unrevetted reduits; command of the crest of the salient of this work; command of the magistral lines; plane of defilade of its crests; height of the escarp of the reduit. The bottom of the ditch independent from those of the body of the place and of the ravelin; width of the ditch; trace of its magistral line and of its crest line; profile of the parapet; width of the terre-plein; loopholed escarp gallery; loopholed tambour forming a reduit; unrevetted reduit of the re-entering place of arms.

Lecture 12.—Traverse closing the opening formed by the ditch of the reduit of the ravelin; traverse covering the escarp of the flank of the reduit of the ravelin and assuring the independence of its ditch; traverse closing the opening formed by the ditch of the ravelin.

Caponnière across the ditch of the ravelin; determination of its glacis.

Organization of the ditch of a reduit of the re-entering place of arms revetted in masonry in the part adjoining the counterscarp of the bastion.

Organization of an unrevetted reduit of the re-entering place of arms at its gorge.

Lecture 13.—Communications. General conditions which they should fulfil; ramps and stairs, their advantages and disadvantages; posterns, their dimensions according to their object; postern in the curtain in the case of a full revetment; plan to be adopted when there are casemates or discharging arches under the curtain; postern in the tenaille; arrangement of the double caponnière at the end adjoining the reduit of the ravelin; enclosed court at a low level at the gorge of this work. Communication leading to the ravelin; its arrangement. Communication in the ditch of the ravelin leading to the reduit of the place of arms and to the covered way. Low-level court of the place of arms.

Lecture 14.—Wooden stairs to be placed when required at the rounding of the counterscarp of the ravelin; sorties from the covered way; arrangement of the communication leading to the covered way when the reduit of the place of arms is unrevetted.

Arrangement of the bottoms of ditches in a front of the first system studied; cunettes for drainage and for evaporation; aqueducts under the caponnières; general inclination of the planes of the ditches towards the cunettes; wet ditches; cunette in the middle of the ditch to increase its depth and to obtain earth; bottom of the "*cuve*;" wet ditch excavated in the middle of a dry ditch.

Lecture 15.—Interior retrenchments; their uses; necessity for constructing them. Decrees and ordinances which oblige governors of

fortresses to construct them if they do not exist in a permanent form. Different sorts of retrenchments, resting on the faces, on the flanks, on the curtains; retrenchments terminating on the faces should not be constructed except under exceptional circumstances; detailed construction of a bastioned retrenchment terminating on the flanks of a bastion.

Lecture 16.—Detailed construction of a redan retrenchment terminating on the flanks of a bastion; the same retrenchment with a cavalier; cavaliers in earthwork to be constructed in the bastions contiguous to the bastions attacked.

Lecture 17.—Bastioned retrenchment terminated on the curtains; equalizing the "remblais" and "deblais;" necessity of making special arrangements to accomplish this.

Lecture 18.—Bombproofs in the body of the place; casemates; arched revetments: bombproof in the ravelin, in its reduit, and in the re-entering place of arms; casemated and blinded batteries to be constructed on the fronts including a bastion which is attacked.

Lecture 19.—Fortification in low wet sites; advantages and disadvantages resulting from the presence of water; construction of a front under the simplest conditions; unrevetted escarps and counterscarps; bastions of a medium size; long curtains; wide ditches; covered ways with a slight command. Salient place of arms with a masonry reduit or loop-holed tambour in its interior. Construction of a front with counter-guards. Application of principles to the case where water is found at a slight depth below the surface. *Second study of a front of fortification.*

Revetted enceinte; dry ditch at the level of the water; height of escarp; medium-sized bastions.

Trace of the body of the place; relief to be given to the crests; trace of the crest line; width of ditches.

Trace of the counterguards, their escarps and counterscarps unrevetted; advantages and disadvantages of revetted gorges.

Enlargement of collateral bastion for the construction of a cavalier; the faces of this cavalier may lose themselves in those of the bastion.

Lecture 20.—Trace of the cavalier and of the ramps leading to the terre-pleins of the body of the place. Detailed trace of the counter-guards; counterscarp glacis at the gorge of these works terminated by two small places of arms. Unrevetted tenaille—its ends are revetted and combined with those of the counterguards, to cover the escarps of the body of the place. Ramps leading to the terre-pleins of the counter-guards. Width of the ditch in front of these works.

Lecture 21.—Ravelin; trace of its magistral and crest lines; its ditch is dry and at the level of the water. Counterguard covering the ravelin, its trace; the extremities of its branches are arranged so as to cover the gorge of the ravelin from the enemy's fire; width of the ditch of this counterguard. Covered ways; glacis; their trace.

Lecture 22.—Communications. Double caponnière in front of the tenaille; necessity of widening its entrance; it is isolated at its extremities by wet ditches. Low-level court at the gorge of the ravelin, and communication leading from it to the covered way; loopholed tambour forming a reduit to the re-entering place of arms, and separated from its terre-plein by a wet ditch. Bottoms of the ditches; advanced ditches. Bombproofs; casemated and blinded batteries.

Lecture 23.—Advanced and detached works, their uses, their inconveniences; in general they are only suitable to large fortresses. Advanced works; their distance from the crests of the parapets which

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flank them. Lunettes are most advantageously placed in advance of bastions. System of lunettes forming a second enceinte. Dimensions to be given to lunettes; width of their ditches, height of their escarps, arrangement of their gorges. Command of these works. Communications conducting to the lunettes. Examples of lunettes, both isolated and forming a system of works; "pièces noyées" (*i.e.* works surrounded by water). Lunettes and other advanced works should if possible enclose reduits. Redoubts; their disadvantages. Flèches; their dimensions; they are generally constructed at the time of a siege. Horn works; necessity of employing them in certain cases. Crown works and double-crown works; arrangement of their gorges. Citadels, their object; connexion between a citadel and a fortress. Detached works; height of their escarps; they must have independent flank defence; they do not generally require covered ways; arrangement of their gorges. These works should have strong reduits.

(ii.) *Mines.*

Lecture 24.—Object of military mines. Exterior effect of mines. Crater; line of least resistance, radius of the crater, radius of explosion, radius of rupture. Four descriptions of mines. Common mines; calculation of charges for a given line of least resistance; miner's rule; practical rule of General Guillemain. Surcharged and undercharged mines; formulæ for calculating their charges. "*Camouflets*," or smothered mines; their maximum charges. The preceding formulæ applied to determine the coefficient g in the case of any particular sort of earth; trial mines.

Comparison of the exterior effects produced by the same charge acting in the same soil when the line of least resistance is varied from that which produces a camouflet, to that which gives the maximum radius of crater. Inferences. Underground effects of mines. Effect of common mines on galleries and branches lined with wood and tamped or untamped. Radius of rupture, extreme limit and radius of thorough rupture. Effects of the same mines on galleries lined with masonry. Effects of surcharged and undercharged mines and of camouflets on galleries and branches.

Distance which may be left between two mines when they are separated by virgin soil or by tamped soil.

Determination of the charge and of the position of a mine which shall produce a given underground effect.

Lecture 25.—Loading mines; different forms and arrangements of the charges; size of the case for the powder; effects of air spaces left round the charge. Comparison of the effects produced by common powder, mining powder, and gun cotton. Tamping, materials, arrangements, length, and how measured; time required for execution; how to allow for a diminution in the length of tamping by an increase of the charge. Principal methods of igniting the charge; "*Moine*" (pyramid of German tinder); "*Boite de Boule*" (box with a moveable tray on which is placed a lighted match; the tray is drawn out by a string leading to a distance, and the lighted match falls on the powder hose); "*Mèche Anglaise*" (Bickford's fuse); "*Saucisson*" (powder hose). Simultaneous explosions. "*Cordeau porte feu*" (French special fuse). Electricity; use of the voltaic battery; conductors; fuses; induction coil. Simultaneous explosions. Subaqueous mines. Mode of placing the powder and of igniting it.

Ventilation of galleries and branches; ventilating chimneys. Envelope and transverse galleries. Fireplaces to create draughts; forge bellows; centrifugal blowers; tubes and pipes for ventilation.

Classification of mines according to the position they occupy in a system of mines. Advanced and retired mines. Countershafts. Mines to be loaded after they are tamped. *Trépan* (borer.) Camouflet machines.

Bored mines; borings, mode of avoiding errors of direction; placing the charge with or without a chamber; making the chamber by means of the jointed borer or by means of small explosions; tamping bored mines.

Lecture 26.—Notes on the form, dimensions, and object of different galleries and branches lined with wood. Principal gallery; great gallery; half-sized gallery; great branch; small branch; Dutch mines; "*rameau de combat*" (very small branches at the ends of permanent counter mines); ordinary shafts; shafts a la "*boule*" (*i.e.* of small size, with Dutch casing at open order); their dimensions. Construction of shafts, galleries, and branches in good and in bad soil. Returns, right-angled and oblique. Notes on the form and construction of galleries and branches in masonry.

Lecture 27.—General conditions to be fulfilled by every good system of counter-mines; choice of the position of the mines, extent, depth; general arrangement of the galleries and branches.

Application of the preceding principles. Counter-mines lined with wood; arrangement actually employed in the regimental schools; more simple arrangement which may be employed when time presses.

Special arrangements of mines against the cavaliers of the trenches, the batteries, the crowning of the covered way, and the assaulting columns.

Counter-mines lined with masonry. Arrangement suitable to a rocky site.

Lecture 28.—Historical and critical summary of the most remarkable systems of counter-mines. Three distinct periods, viz.:—

First period, 1503 to 1609. Sieges of the Château de l'œuf (Naples) and of Candy.

Second period, 1609 to 1762. Systems of Mesgrigny, Delorme, Cormontaigne, Vallières.

Third period, 1762. Systems of Rugy, Mouzé, Marescot, Gillot, Gumpertz and Lebrun, Lebrun.

General observations upon these systems. Escarp galleries, counter-scarp galleries, envelope galleries, transverse galleries, their advantages and defects; how they may be utilized.

Attack and defence of mines; methods of proceeding previous to the introduction of surcharged mines; summary of the mining operations at Schweidnitz.

Historical and critical summary of the methods of attack used or proposed subsequently to this siege.

Attack "*de vive force*;" methods of Bélidor and Gillot. Attack by successive craters formed by surcharged mines, either using shafts or galleries. Attack by bored mines; means of defence to be opposed to these various modes of attack. General rules for attack and defence by mining.

Lecture 29.—Blasting, boring, loading; use of powder mixed with sawdust; tamping, priming, igniting; precautions to be taken. Blasting under water; blasting by means of large charges.

Demolitions. Demolition of walls not backed with earth, of bridges, of walls backed with earth. Breaching an escarp revetment wall; attaching a miner; forming the branch gallery; arrangement of the mines; charge. Methods of Vauban, of Cormontaigne, of the Bapaume commission. Mining under the foundation of an escarp wall.

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Blowing in a counterscarp; removing the rubbish from the foot of a breach by a mine. Demolition of arched barracks, of powder magazines, of galleries of mines, &c.

SECTION II.

Fortification of irregular sites.

(i.) *Defilade.*

Lecture 30.—General ideas of defilade; inconvenience of the old method of "tangent planes." Direction of enemy's fire; three sorts of defilade, direct, by the terre-plein, by lateral covering masses.

"Dangerous ground;" distance to which the different works of fortification, masonry escarps, and military buildings, ought to be defiladed. Command of the "dangerous ground;" its horizontal limits on front and on flank.

Application to the cases in which we require to cover a point, a straight line, a broken or curved line. Practical modes of proceeding.

Traverses; their height, their advantages and inconveniences, their construction.

Lecture 31.—Defilade of an indefinite straight crest; inclination of the terre-plein; use of traverses and "*dés*" (small traverses). Defilade by successive steps, by breaking the crest lines; use of inclined surfaces for the terre-pleins or covering masses. Defilade of a redan; "comblement de la gouttière" (filling the hollow formed by the intersection of two planes of defilade by a traverse acting as a parados); lowering the covering masses; command of the defiladed crests.

Lecture 32.—Applications. Defilade of a curtain, of a tenaille, of a ravelin without a reduit, of the reduit of a ravelin, of a bastion. Defilade of a ravelin with a reduit, of a counterguard, of a covered way; application of counterscarp glacis. Defilade of advanced works, and of masonry; defilade by the trace. Bellonnet's defilading instrument.

(ii.) *Description of an ideal fortress.*

Lecture 33.—Influence of the form of the ground on the position of the fortification. Examination of the principles of the old engineers regarding the regularity of a fortress.

Advantages of a small number of points of attack which are known beforehand.

Cormontaigne's triangular fortress; peculiar properties of fronts in a straight line; influence of a salient crest, of a re-entering crest, or valley.

Influence of the form of a town on the trace of the fortification. Aid which may be derived from the presence of water in the design for a fortress.

Ideal fortress; description of the site; data relative to the trace of the polygon, and the reliefs of the fortress and of the tête-de-pont.

Lecture 34.—Discussion on the relative strength of the different fronts of the ideal fortress. Special trace adopted for each front, to suit its particular office in the general defence.

Interior retrenchments to be made in the bastions which are liable to attack. Dispositions to be adopted for these retrenchments; detailed trace of each.

Lecture 35.—Continuation of the same trace. Outworks, their distribution to the different fronts in accordance with their relative importance. Ditches of the body of the place and of the outworks; their dimensions and arrangement.

Lecture 36.—Details of the outworks; their relative reliefs. Communications between the fortress and its outworks; town gates; conditions which should be fulfilled by them; water gates; passages for railways through the fortifications.

Lecture 37.—Powder magazines; their number, their situation; mode of securing them against plunging fire. Directions for defilading the works of the various fronts.

Lecture 38.—Advanced works of the ideal fortress; their situation, their organization, their reliefs, their communications with the fortress; reduits to be formed in those most exposed to attack.

Lecture 39.—Inundations; manœuvres which may be performed with water. How to produce the inundation of the ideal fortress. Dams in the river and the navigable canal. Precautions to be taken to secure the great bridge with its sluices, and to cover during a siege the communication between the town and the tête-de-pont. Sluices for letting in water and for allowing its escape; their arrangement. Employment of water in the defence of the ideal fortress. Upper and lower inundations; means of defending them.

Lecture 40.—Critical examination of the general trace and of the different arrangements which have been adopted for the ideal fortress. Details of construction. Repetition of some of the details of construction which are useful in facilitating the execution of the project for the details of the ideal fortress.

(iii.) *Earthworks.*

Lecture 41.—Digging; practical way of determining the tenacity of the soil; soil "at one man" or "at several men." Transporting earth; tools and machines used; shovels, wheelbarrows, hand-barrows, baskets, hand carts, carts, waggons. Determination of the length of "relays." Prices for relays. Comparison of these different modes of transport. Vertical movement of earth; "*bourriquet*" (a machine for raising earth in boxes with hinged bottoms), "*machine*," "*coignet*," "*ecoperche*," (sort of derrick for vertical lifts of earth, wheelbarrows being raised by it). Different arrangements.

Lecture 42.—Establishment of working party with wheelbarrows; distance between the working parties; mode of conducting the work. General principles of economy of labour in the transport of earth. Transport on a horizontal plane and on an inclined plane to form a parapet. Transport considered in the three cases of simple horizontal movement, of an excavation between two masses of made earth, and of a mass of made earth between two excavations. Transport of earth from an excavation to form a mass of made earth on the far side of an earthen slope or of a wall. Useful excavation; original masses of remblai ("*remblai primitif*"); temporary excavations and depôts of earth.

Lecture 43.—Application of the preceding principles to the construction of a fortress. Body of the place, without or with a glacis, with outworks. Excavations for the construction of galleries for mines. Mode of conducting a working party for forming the ramparts of a work of fortification; when the earth is moved entirely by wheelbarrows, when the movement by wheelbarrows is combined with a vertical lift. Execution of the works on the ground. "*Repères*" (tracing the works); "*attachements*"; tracing the revetments; verification of the defilade; construction of the earthwork.

(iv.) *Details of the Duties of the Engineers in Fortresses.*

Lecture 44.—Organization of the corps of engineers; its composition; its duties in fortresses in peace time. General duties connected with the

execution of works, contracts, payments, and accounts. Charge of magazines; barrack repairs (*service du casernement*); hired and rented buildings (*locations et affermages*); preparation of projects; measurements (*avant mètre*); estimates.

SECTION III.

General questions of fortification.

(i.) *Improvement of existing fortresses.*

Lecture 45.—Projects for improving existing fortresses; repairing the walls and earthworks; modification of the reliefs. Defilading the works; remodelling the glacis; covering masses of earth to protect the revetments. Independence of ditches. Examples of such improvements in the fortification of Metz. New works; lunettes, counterguards, tenailles, reduits in the places of arms; communications. General conditions of economy in the projects for improving existing fortifications.

(ii.) *Value of fortified places; their distribution on a frontier; their special organization.*

Entrenched camps.

Lecture 46.—Necessity for having a certain number of fortresses in a powerful state. Frontier fortresses; fortified depôts; interior fortresses; maritime fortresses. Active or strategic uses of fortresses. Moral effect produced on the plans of the enemy by the existence of fortresses. Lessons furnished by history. Methodical warfare; examples drawn from the war of the Spanish succession, from the Spanish war of independence, from the frequent invasions of Germany and Italy. Rapid war of invasion; campaigns of 1814 and 1815. Objections which have been made to fortresses on account of these wars. Opinion of the Emperor Napoleon the First on fortresses. Importance of the part played by fortresses in the case of the invasion of a large state, supposing the capital to be fortified, and that there be a sufficient number of places of refuge in the interior of the country. Objection to the expense caused by fortresses. Commissions of 1818 and 1836.

Lecture 47.—Distribution of fortresses on the frontier of a state. Critical inquiry into the system proposed by Cormontaigne and by d'Arçon. Necessity of fortifying the capital and of having in the interior a certain number of places of refuge, in order to give their full value to the frontier fortresses. Examination into the different natural circumstances which would influence the mode of defending a frontier. Principles resulting from the numerous works executed by Vauban for the defence of the French frontier. Maritime frontiers; their junction with the land frontiers. Mountainous countries. Frontier covered by a river. Level countries intersected by watercourses. Streams parallel to or perpendicular to a frontier. Defiles, forests, marshes, canals. Organization of frontiers in these different cases. Description of the defensive arrangements adopted by Vauban for the North Eastern frontier.

Lecture 48.—Special organization of fortresses. Capitals. Systems of fortification proposed for Paris; plan adopted.

Proper organization for fortresses intended as strategical pivots; for maritime fortresses; for fortresses in level situations, and for those in mountainous countries. This organization must be varied according to the importance of the fortress, with the part it is to take in the general scheme of defence, with peculiarities of the site, &c.

Lecture 49.—Entrenched camps. Those constructed by Vauban in connexion with fortresses; their object. Modifications introduced into

those entrenched camps to favour the operations of an army or of a corps d'armée. Camps at Ulm and Genoa. Ideas of General Rogniat on the subject of entrenched camps. System of forts either supporting one another, or independently defensible; their advantages and disadvantages. Disadvantages resulting from the absence of a fortified position in the centre of an entrenched camp. Distance of the forts from the central reduit and from one another. Examination into the dispositions adopted for the entrenched camp of Paris. This camp may be considered as satisfying in general all the conditions of a good defence. On lines considered as works of fortification. Organization to be adopted so as to profit by natural obstacles. Disposition which is allowable for the defence of lines. Lines of Torres-Vedras.

(iii.) *Frontier Zones and Military Lands.*

Lecture 50.—Frontier zones. Necessity for the intervention of military authority in the works of public usefulness constructed near frontiers. History of the question.

Mixed Commission of public works; its composition in accordance with the law of the 7th April 1851; powers of this Commission; decree of the 16th August 1853.

Modifications introduced in 1859, 1860, and 1861. Military lands ("*servitudes*") around fortresses; their necessity; history of the subject. Decree of the 10th August 1853. Special arrangements at Paris.

Second Part.

Notes on the History of Fortification.

(i.) *Bastioned Fortification.*

Lecture 51.—Notes on the history of ancient fortifications, and on the methods of attack and defence before the invention of gunpowder.

Lecture 52.—Necessity of changes introduced into fortification after the invention of firearms; towers protected by earth; small bastions. Italian fortification, first trace applied to the enceinte of Antwerp in 1540. Improved trace; enlargement of bastions; cavalier; ravelin; covered way without traverses, but with re-entering place of arms. Application of this trace to the citadel of Antwerp by Paciotto in 1567. Trace suggested by Castriotto in 1564. German fortification; Albert Dürer, 1527. Daniel Speckle; principles propounded by this engineer; his original trace; strengthened trace. Rimpler; his system with medium-sized ("*médians*") bastions, 1673.

Lecture 53.—Dutch fortification. Trace proposed by Samuel Marolois in 1615, and by Freitag in 1630. Improved Dutch fortification. Coëhorn; principles laid down by this engineer towards the end of the 17th century. Exterior wet ditches; interior dry ditches at the level of the water; exterior works unrevetted; interior works revetted; retrenched bastions. Coëhorn's first trace; general description of his second and third traces. Comparison of these traces. Advantage of this style of fortification in low wet sites.

Lecture 54.—French fortification. Errard Bar-le-Duc, 1594; profile of his rampart. His trace has been applied to the citadel of Amiens and to some of the fronts of Verdun. Beville; principles of his trace, profile of his fortification, faussebraie on the curtain, ravelin. Pagan, 1645; great, medium, and small fortifications; flanks with three tiers of fire; inner bastions; ravelin with reduit; counterguards in advance of the bastions.

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Lecture 55.—Vauban's first system. The majority of the French fortresses have been constructed and improved by this engineer. Trace of a front on this system, with or without orillons. Vauban's second and third traces; Belfort, Landau, New-Brisach. Detailed examination of these systems.

Lecture 56.—Trace proposed by Cormontaigne. Difference between this trace and that of the fronts actually constructed at Metz by this engineer. Modifications introduced into Cormontaigne's trace by the school of Mézières.

Lecture 57.—General description of the front of Obenheim and of the modern front. Fronts of Chasseloup-Laubat and of Bousmard. Detailed examination of these two latter fronts.

Lecture 58.—Front of General Haxo; examination of this front. Choumara; the ideas of this engineer on fortification; independence of parapets and escarps; double flanks; ditches with interior glacis; employment of military buildings for forming a general retrenchment, &c.

(ii.) *Polygonal and tenailled fortification.*

Lecture 59.—Montalambert; his objections to bastioned fortification; description of his systems. Strengthening existing fortresses.

Polygonal fortification; Fort Royal, Fort Dauphin, project for the enceinte of Cherbourg.

Tenailled fortification; Alghisi da Carpi, 1570; Bellicks, 1640; Landsberg, 1712. Montalambert's tenailled fortification. Details of the towers proposed by Montalambert.

Lecture 60.—Carnot. Defects which he discovers in bastioned fortifications; means of remedying these defects. Detached escarps; counter-sloping glacis; use of bombproofs, and of vertical fire. Systems of fortification suggested by this engineer. Examination of these systems. Principal traces employed in Germany, after the ideas of Carnot and Montalambert. Trace employed for the fortress of Germersheim.

Lecture 61.—Traces adopted at Rastadt, Coblentz, Posen; criticisms on these traces.

Lecture 62.—Traces employed at Kœnigsberg, Cracow, Antwerp, Verona; examination of these traces.

Lecture 63.—Examples of detached forts; Maximilian towers; towers at Verona; forts at Cologne, at Verona, at Portsdown-hill, at Antwerp. Examination into the dispositions adopted.

Lecture 64.—Comparison between the polygonal and bastioned systems; advantages and disadvantages of each of these descriptions of fortification. The bastioned system seems preferable, especially in the case of dry ditches and large fortresses. It may be advantageous, nevertheless, in certain cases to apply the polygonal system. Such would be the case in a detached fort, in a fortress in a mountainous country, &c.

Third Part.

Attack and Defence of Fortresses.

(i.) *Attack and defence of bastioned fortifications.*

Lecture 65.—Preliminary operations of a siege. General considerations; causes determining the necessity for undertaking a siege; army of observation; relieving army. Different modes of conducting the

attack; by stratagem, by treachery, by surprise and assault, by blockade, by bombardment, and by regular siege.

Investment; arrival of the army, establishment of the camps, position assigned to the different arms, communications to be established. Lines of circumvallation and contravallation; Vauban's method. Objections made against lines. Dispositions which may be adopted under present circumstances. Fortified camps. Works of circumvallation.

Lecture 66.—Operations of the besieger from the investment to the opening of the trenches. Preparation of fascines, gabions, pickets, &c. Siege material; artillery park; position of parks; large and small depôts; bridge equipment. Engineer park. Siege hospital. Reconnaissance of the place; measurement of a base, and survey towards the interior and towards the exterior of this base. Choice of the point of attack. Considerations which may influence this choice; features of the country; strength of the fortifications; facility of communications. Batteries of the investment, their object and position. General object of the operations of the attack. Simple attack; double attack; connected attacks; Vauban's and Cormontaigne's systems of attack. Engineer troops; roster for duty amongst the engineers. Parallels; their object; distance of the first parallel from the place; influence of advanced works, and of the features of the ground. Trench depôts; communications between the trench depôts and the first parallel.

Lecture 67.—Operations of the *defence* up to the opening of the trenches. The three conditions of peace, war, and siege. Authority of the governor in time of peace and in time of siege. Taking stock of the provisions. Organization of the national guard and of the fire brigade; volunteer companies. Inundations. Destruction of cover near the fortress. Guarding against surprise. Garrison of the works. Duties of the artillery; armament of safety. Duties of the engineers; improvement of the works, palisading the covered ways, blindages, communications, mines. Rosters for duty. Advanced posts to be established during the investment. Sorties.

Lecture 68.—Operations preceding the opening of the trenches. Taking up the prolongations of the capitals. Distance from the fortress. Tracing the first parallel, and the communications to it, from the rear. Troops employed in the trenches; their equipment. Guard of the trenches. Distribution of working parties. Siege batteries before Vauban's time. Invention of ricochet fire at the siege of Philipsburg in 1688. Enfilading batteries; counter batteries; mortar batteries. Batteries of the first period; their object, their position, and armament. Execution of the first parallel, when it cannot be undertaken in its whole extent on the first night. Completed profile of the first parallel, and of the boyaux of communication. Modifications required in the case of rock or water being found at a slight distance below the surface. Steps for firing over the parapet, or for passing over it.

Lecture 69.—Operations to be performed by the officers of engineers previous to the completion of the first parallel. Exact determination of the prolongations of the faces and capitals of the works attacked. Relieving the guards and working parties. Redoubts in the first parallel. Approaches in advance. Defilade and tracing of the boyaux on paper in the case of a horizontal site. Defilade and tracing on the ground in the same case. Construction of the second parallel, and of the batteries of the second period. Uses and trace of the second parallel. Flying sap. Steps for musketry, or for passing over the parapet. Object of the batteries of the second period; position of these batteries; their armament. Approaches in advance of the second parallel. Trace

of the third parallel. If necessary, some of the batteries of the first or second period, which it has been found needful to remove, may be placed here. Boyaux in advance of the third parallel, demi-parallels.

Lecture 70.—Mode of conducting the *defence* up to the opening of the trenches. General precautions. Sorties. Action of the artillery. Operations to be performed from the opening of the trenches until the construction of the third parallel. Service of the artillery. Armament of the place during this period of the siege. Traverses, bonnettes. Direction of fire. Reserve artillery. Counter approaches. Arrangements proposed by Cormontaigne and by General Rogniat relative to the armament of the place, after the batteries of the second parallel have opened fire. Arrangements which may be made under present circumstances. Duties of the engineers. Duties of the infantry. Garrison of the works attacked. Musketry fire from the covered way. Sorties against the second parallel.

Lecture 71.—*The Attack.*—Uses and trace of the fourth parallel. Defilade of the trenches, on paper, in the case of an inclined plane of site. Mode of finding the plane of defilade. Defilade of the trenches on the ground in the case of sloping ground. Instrument for defilading the trenches (*défilateur des tranchées*). Batteries in the fourth parallel, their positions, their communications. Advance step by step towards the covered way; circular portions; trench cavaliers, Vauban's profile, Bousmard's profile; cavaliers constructed with fascines and with sandbags. Substitution of mortar batteries for trench cavaliers when the construction of these small works becomes impossible, owing either to the form of the ground or to the artillery fire of the defenders.

Lecture 72.—*The Attack.*—Sapping; regular sap, its rate of progress; half sap; changing direction; single sap breaking out from a single sap; double sap breaking out from a single sap; half double sap; double sap with central traverses, or with alternate traverses. Approaches by combinations of different saps. Sapping with sandbags. "*Sape sans formes*" (*i.e.* sap cut to its full section at once by two men working abreast, so as to get more earth for cover at the head of the sap). "*Sape dérobée*" (*i.e.* advancing a single sap by short pieces of flying sap at night). Resistance of materials employed in sapping to the penetration of musketry.

Lecture 73.—*The Defence*, from the construction of the third parallel to the crowning of the covered way. Service of the artillery during this period. Duties of the engineers; tambours, block houses. Duties of the infantry; musketry fire, sorties.

The Attack.—Crowning the covered way by assault.

The Defence.—Precautions to be taken to prevent the crowning of the covered way, either step by step or by assault.

Lecture 74.—*The Attack.*—Continuation of the crowning of the covered way. Traverses; their positions and construction. Tracing the counter batteries. Battery for breaching the ravelin; its trace. Blinded descent into the covered way. Crowning the counterscarp. Prussian method of crowning the covered way.

Lecture 75.—Approaches in advance of the fourth parallel. Tracing the fifth parallel. Completion of the crowning of the covered way of the ravelin. Descents into the ditches; by open trench, the counterscarp being revetted or unrevetted; by blinded gallery; or by great gallery of a mine. Batteries of the fifth parallel. Approaches in advance of this parallel.

Trench cavaliers against the covered way of the bastion. Crowning the re-entering place of arms. Breaching battery against the reduit of the

place of arms. Counter batteries against the flanks of the collateral bastions.

The Defence, during the crowning of the covered way. Service of the artillery; armament for the close defence. Duties of the engineers; removal of the bridges in the wet ditches whenever these bridges can be seen by the enemy. Duties of the infantry; musketry fire, small sorties.

Lecture 76.—*The Attack;* passage of the ditch and assault of the ravelin.

Passage of dry ditches in ordinary soil; precautions against sorties. Fourcroy's double descent; passage of ditches when the bottom is at the natural water level (*à fleur d'eau*); passage of ditches with rocky bottoms, or excavated in rock.

Passage of wet ditches; stagnant water; Vauban's and Cormontaigne's bridges; running water; passages of ditches in which the level of the water can be raised or lowered by the defenders.

Capture of the ravelin, by regular approach or by assault; Cormontaigne's arrangements; the "pie's nest." Attack of an unrevetted ravelin.

Lecture 77.—*The Attack.* Capture of the reduits of the place of arms; of the coupures, if there should be any; and of the reduit of the ravelin. Approaches in the ditches of the ravelin. Approaches in the re-entering place of arms, and assault of its reduit. Approaches in the interior of the ravelin; passage of the ditch of the coupure; lodgment in this work. Crowning the counterscarp of the reduit of the ravelin; descent into the ditch; attaching a miner; assault; approaches in the interior of the reduit.

Lecture 78.—Attack of the body of the place and of the interior retrenchments. Breaching batteries against the bastion; descents into the ditches; assault of the bastion. Attack of the interior retrenchments. Redan retrenchment resting on the flanks; the same retrenchment with a cavalier; bastion retrenchment resting on the flanks, or on the curtain. Precautions to be taken at the time of the final assault.

Lecture 79.—*The Defence*, from the crowning of the covered way to the fall of the place. Mode of resisting the crowning of the re-entering places of arms, the descents into the ditches, the passage of the ditches, and the assaults; mines under the breaches. Defence of the reduit of the ravelin, of the coupure, if there be one, and of the reduit of the place of arms. Defence of the bastion and of its retrenchment. Accessory means for the defence.

The Attack; attack of a lunette; the delay it occasions in the general rate of progress of the attack. Attack of a flèche, of a block-house, of a horn-work, of a crown-work, of a double crown-work.

Lecture 80.—Employment of mines in the defence of fortresses. Different arrangements; fougasses and shell fougasses. Defence of glacis by mines; defence of outworks and of retrenchments. Imaginary journals of sieges. Object of journals of sieges; theory of Fourcroy; principle of "moments;" rate of sapping at different periods of the siege. Comparatively small reliance to be placed on journals.

Lecture 81.—*The Defence;* strength of the garrison; artillery, men and *matériel;* engineers; infantry; cavalry. Variation in the number of the garrison caused by the existence of advanced works, such as lunettes, horn-works, crown-works, double crown-works. Magazines of powder, timber, food. Siege hospital.

The Attack; strength of the besieging army; artillery, men and *matériel;* engineers; infantry; cavalry. Capitulation; taking possession of the place. Vauban's maxims for conducting attacks.

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(ii.) *Attack of Polygonal Fortifications.*

Lecture 82.—Method of attacking a fortress on the polygonal system, either with or without counterguards.

Application of these methods to the attack of the fortresses of Germersheim, Rastadt, and Coblentz.

Detailed discussion on the point of attack which should be selected in the case of each of these fortresses.

(iii.) *History of Sieges.*

Lectures 83 and 84.—Historical account of two actual sieges. Position and neighbourhood of the fortress; history of its fortification; rapid sketch of the different sieges which the place has sustained previous to that given in detail. General military situation at the time of the siege. General account of the events of the attack and of the defence; influence of the result on the after operations of the war. Principal points to be noted with regard to the attack and to the fortification.

II.—COURSE OF MILITARY ART AND FIELD FORTIFICATION.

The course is divided into six parts, and consists partly of lectures, partly of exercises of application in the halls of study and on the ground.

First part.—Historical considerations, and organization of armies	6	lectures.
Second part.—Tactics	3	,,
Third part.—Castrametation	3	,,
Fourth part.—Field fortification	16	,,
Fifth part.—Military communications	10	,,
Sixth part.—Strategy	6	,,
Total	44	,,

First Part.

Historical Considerations, and Organization of Armies.

Lecture 1.—Introduction. Greek army. Infantry. Order of battle. Marches. Greek cavalry. Composition of a Greek army.

Roman army. The legion in the time of the consuls. Defensive and offensive armies of the Romans. Order of battle of the Roman legion. Comparison of the Roman legion and the Greek phalanx.

The legion under Marius, and its deterioration under the Emperors. The legion under Vegetius. Armies of the Barbarians.

Lecture 2.—Military organization of the Franks under their early kings. Results, in a military point of view, of the feudal system. Feudal armies. Brief account of chivalry. The crusades and wars against England. Establishment of the first standing armies. Revival of military art. Consequences of the introduction of firearms. Successive improvements in the art of war, and the organization of armies from the 16th century to the present time.

Lecture 3.—Necessity for standing armies. Characteristics which should be possessed by them. Recruiting. Promotion. Gradation of ranks. Status of officers. Various positions of military men. The component parts of armies; Infantry, Cavalry, Artillery, Engineers, Staff.

Composition of the army under the Revolution and the Empire. Organization of a French army at the present day.

The General Staff. The *Intendance;* the various services which depend upon it.

Relations between the forces of each arm which enter into the composition of an army. Other departments not classed among the principal arms.

Lectures 4, 5, and 6.—Outline of the military organization of the chief European powers.

Second Part.

Tactics.

Lecture 1.—Definitions. Formations. Manœuvres. Desiderata for the success of manœuvres. Line formations, (1) of infantry, (2) of cavalry, (3) of artillery. Rules for skirmishers.

Lecture 2.—Summary of the principal battalion movements employed in passing from the formation in line to the formation in column, and *vice versâ*. Movements in column; movements in line; dispositions against cavalry.

Lecture 3.—Principal evolutions of lines of troops. Orders of battle. Formation of the line of battle. Modes of forming infantry for the attack. Action of cavalry; main formations; charges. Action of artillery. Employment of the three arms in combination.

Third Part.

Castrametation.

Lecture 1.—General principles of castrametation. Situation, construction, and arrangement of huts. Camps for a regiment of infantry, a regiment of cavalry, and a battery of artillery.

Lecture 2.—Method of tracing a camp on the ground. Huts; details regarding their construction. Tents, bivouacs, modes of obtaining shelter. Field kitchens and ovens. Selection of a site for a camp. Precautions to be taken against surprises; grand guards; advanced posts, videttes, sentries.

Lecture 3.—Practical instruction in the method of tracing camps.

Fourth Part.

Field Fortification.

Lecture 1.—Definition of fortification in general. Objects and characteristics of field fortification. Its utility illustrated by historical examples. Opinion of Napoleon. Essential principles of field fortification. Discussion of the ordinary profile for earthworks. Calculation of the dimensions required for a ditch on horizontal ground.

Lecture 2.—Definitions connected with the trace of works. Fundamental considerations. Discussion of the six general principles. Examination of other principles less general in their application than the preceding. Employment of a reserve. *Réduits.*

Lecture 3.—Principal simple works, or such as enter into lines of works. Relations which should exist between the length of the crest and the internal capacity of an enclosed work. Maximum and minimum dimensions of square redoubts. Defects inherent in the trace of such redoubts. Circular redoubts. Redoubts *à cremaillères*. Star forts. The bastioned trace.

Lecture 4.—Revetments of sods, *pisé*, fascines, sandbags, hurdles, gabions, planks, and stones. Cases in which revetments may be used for the slopes of the ditch. Choice of different kinds of revetments. Illustrations.

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Lecture 5.—External arrangements. Accessory defences. Abattis. *Trous de loup.* Pickets. Crows'-feet. Palisades. Fraises. *Chevaux de frise.* Stone fougasses. Precautions to be observed in the organization of accessory defences.

Lecture 6.—Internal arrangements. Arrangements for musketry fire. Sandbag loopholes on the parapet. Arrangements for artillery fire. Barbettes and embrasures; their advantages and disadvantages. Construction of a barbette and of an embrasure.

Lecture 7.—Continuation of the subject of internal arrangements. Powder magazines formed with timber and fascines. Reduits constructed of earth, of stockades, and of timber, or block-houses. Advantages and disadvantages of the latter. Block-houses employed in Africa. Modes of closing the entrances to field works.

Lecture 8.—Artificial inundations. The conditions under which they can form an obstacle. Positions and dimensions of dams. Details of construction. Use which can be made of an inundation of less depth than 1 metre 60 centimetres.

Lecture 9.—Explanation of the meaning of defilade. The defilade of field works ought chiefly to be effected by their trace and position. Definitions: dangerous ground, dangerous points. Defilade of a detached work open at the gorge. Defilade of a detached enclosed work; in what cases it is possible. Employment of traverses. Incomplete defilade may sometimes be sufficient.

Lecture 10.—Continuous lines; lines with intervals. Consideration of the various types of redan, tenaille, and cremaillère traces. Bastioned lines. Comparison between continuous lines and lines with intervals. Principal objections to their employment. Utility of each type under certain circumstances, illustrated by examples.

Lecture 11.—Lines on uneven ground. Their trace should be governed by the form of the ground. Mode of fortifying a plateau. Expedients for defilading particular portions of lines.

Mode of utilizing natural obstacles, such as woods, escarpments, marshes, watercourses, &c. Means of putting a house, a village, or an open town into a state of defence. Defence of bridges and roads.

Lecture 12.—Têtes-de-pont. Advantage of réduits in such works, for the purpose of facilitating the passage of an army in retreat. Trace for a large tête-de-pont. Examples.

Chief circumstances in which lines are employed in war. Lines of circumvallation and contravallation. Frontier lines; entrenchments against a sudden invasion. Lines constructed by an army advancing to a distance from its base in an enemy's country. Entrenchments on a field of battle. Lines proposed by General Rogniat.

Lecture 13.—Attack and defence of entrenchments; of continuous lines; of lines with intervals; of a detached work. Details as to the means employed for overcoming obstacles. Examples illustrating the attack and defence of lines.

Lecture 14.—Instruction in the operations of profiling and defilading works on the ground.

Lecture 15.—Instruction preparatory to the project for field works, which is executed by the students. Calculation of the dimensions of a ditch corresponding to the front of a work of variable relief, constructed either on level or uneven ground. Details regarding traverses, réduits, caponnières, accessory defences, &c.

Lecture 16.—On the construction of entrenchments. Practical operations of tracing. Distribution of working parties, for the construction of a strong and durable work. Necessity, in most cases, of rapidity in

the construction of entrenchments. Maxims laid down by Vauban on this subject. Mode of directing the work with the view of obtaining the most advantageous results, and, when abundance of labour is available, of finishing a work in the least possible time.

FIFTH PART.

MILITARY COMMUNICATIONS.

(*a.*) *Roads.*

Lecture 1.—Classification of roads. Section and trace of roads in level and hilly country. Detailed instructions regarding a project for a road. Conditions peculiar to military roads.

Lecture 2.—Construction of paved, metalled, and macadamized roads. Roads for the purpose of crossing difficult ground, constructed with fascines, logs, &c. Maintenance and destruction of roads.

(*b.*) *Military Bridges.*

Lecture 3.—Considerations regarding the rapidity of currents, the variations in the beds of rivers and fords. Transverse sections and sinuosities of rivers. Reconnaissance of a river.

Essential conditions which should be fulfilled by a military bridge. Relation between buoyancy and the load borne in the case of floating supports. Anchorage. Construction of the piers. Means of securing stability in bridges.

Lecture 4.—Different methods of constructing a pontoon bridge. Bridges of ordinary boats. Mode of withdrawing a boat bridge.

Lecture 5.—Raft bridges. Relation between the specific gravity and the load which can be supported by a raft. Number of logs required for a raft bridge over a river of given width. Weight of a log. Number of rafts required and intervals at which they should be placed. Construction of a raft and of a raft bridge. Cask and trestle bridges.

Lecture 6.—Rope bridges; their employment. Chain bridges. Calculation of the tension and diameter of ropes and chains. Construction of a suspension bridge, and practical calculations connected with it.

Lecture 7.—Pile bridges; bridges constructed of carriages, of gabions. Brief account of the Birago bridge.

Lecture 8.—Measures to be taken for the preservation of military bridges. Demolition of temporary and masonry bridges. Repair of bridges.

Lecture 9.—Flying and trail bridges. Passage of rivers by fording, swimming, and on ice.

Lecture 10.—Mode of carrying out the passage of rivers by an army advancing or retreating. Examples illustrating both cases.

SIXTH PART.

STRATEGY.

Lecture 1.—Definitions. Fundamental principle of all operations of war. In every theatre of operations distinctions are made between, (1) the base, (2) the objective point, (3) the lines of operation. Strategical points. Strategical lines.

Lecture 2.—Marches. Strategical marches and marches of manœuvre. Advanced and rear guards. Supplies; system of magazines, system of requisitions. Invasions. Battles. Examples.

Lecture 3.—Positions. War in a mountainous country. Retreats. Pursuits. Convoys. Partisan warfare.

Lecture 4.—Winter quarters. Cantonments. War against guerilla bands. Military reconnaissances.

Lecture 5.—Précis of the campaigns of the French armies.

Lecture 6.—Analysis of the chief campaigns of great generals.

PROGRAMME OF THE EXERCISES OF APPLICATION WHICH ARE EXECUTED IN THE HALLS OF STUDY.

These exercises consist of four plates of drawings, two memoirs, and a project for field works. Of the four plates, two refer to field fortification, and two, which are accompanied by memoirs, to military communications.

Programme of the Drawings.

Plate No. 1.—*Elements of lines.*

Trace on a scale of $\frac{1}{1000}$ of the exterior crest (solely) of a redan, a lunette, a redoubt, a star fort, and a bastioned fort, in accordance with a special programme of conditions furnished separately to each student.

Construction on a scale of $\frac{1}{200}$ of a detailed profile for each of these works, on the supposition that they are to be constructed on level ground.

Detailed calculation of the remblai and deblai for one of the works which will be indicated by the professor.

Plate No. 2.—*Details of a field work.*

Trace on a scale of $\frac{1}{200}$ of a portion of the work of which the deblai and remblai have been calculated.

Drawing of a barbette, and of a perpendicular or oblique embrasure.

Details regarding revetments with fascines, hurdles, sods, and pisé.

Drawing of a block-house.

Plate No. 3 (accompanied by a memoir). *Project for a road.*

Project for a portion of a road on ground represented by contours, in accordance with a special programme furnished to each student.

Plate No. 4 (accompanied by a memoir). *Military bridges.*

1. Boat bridge.—Drawing of three bays of a pontoon boat bridge, the two first showing the construction of the bridge by successive bateaux, the third showing the method of construction by rafts.

2. Raft bridge.—Mode of establishing a raft bridge, with given data as to the width of the river, the troops for whom the bridge is intended, the length, mean diameter and character of the trees available, and the length and thickness of the supporting beams. The plan and a transverse section of two bays of the bridge will be drawn.

3. Trestle bridge.—Drawing of the elevation and section of a trestle, the length of the cross-beam and of the legs up and down stream being given. Drawing of the mode of connecting the legs and the cross-beam.

4. Project for crossing a broken arch, having given as data—the width of the opening, the height of the roadway of the bridge above the level of the water, the depth of the stream, the velocity of the current, the kind of troops who have to cross the bridge, the time and resources in men and material at disposal.

In the memoir accompanying the plate of military bridges a detailed account is given of the mode of construction of each kind of bridge, the circumstances under which each is applicable, its advantages and disadvantages, accompanied by full calculations of its buoyancy, the length of time and amount of material and labour required for its construction.

PROGRAMME OF THE PROJECT FOR FIELD WORKS.

This project is executed by the students, in accordance with special conditions furnished to each individual. The object is to make the students study, (1) the trace, (2) the complete organization for defensive purposes, (3) the details of the construction of field-works. The exercise consequently comprises three plates of drawing and a memoir, which is divided into three sections.

Programme of the Drawings.

Plate 1. General plan.—The object of this plate is the investigation of a trace, and a combination of works suited for fortifying a given tract of ground under circumstances of war defined in a special programme. Each student receives a lithographed plan, representing the ground to be fortified. He indicates on this plan the works which he proposes, tracing the horizontal projections of the crests and the lines of the ditch, and showing the stockades and palisades in dotted lines. The relief of the crest is marked at the angles of the works. The positions of the barbettes, embrasures, traverses, barriers, &c., are marked by letters, which refer to explanatory remarks. The lines of fire are shown by red lines. The scales of slope are traced in blue; and the positions of the troops are shown according to the usual conventional signs.

Plate 2. General arrangements of a work. — The object of this plate is to show the details of the internal and external arrangements of a work of given form, with the view of rendering it capable of a good defence. Each student draws the detailed plan of one of the works drawn in the 1st plate. He shows the ditches, parapets, embrasures, accessory defences, reduits, descents into the ditches, &c., in accordance with given conditions. The profiles which have served for the complete projection of the work are contained in the same plate. The scale employed is ordinarily $\frac{1}{250}$.

Plate 3. Details of construction.—The object of this plate is to show the distribution of the working parties, and the arrangements to be adopted under various circumstances in the construction of field works. Each student shows how the work drawn in the 2nd plate would be constructed, (1) if the work was intended to be strong and durable, (2) in order to attain useful results rapidly with limited means, (3) in order to complete the work in the shortest possible time with abundant means at disposal.

The distribution of the working parties on each of these suppositions is shown on a plan, and the successive stages of the work are represented by a series of profiles through one of the faces, on a scale of $\frac{1}{100}$.

Programme of the Memoir.

The memoir is divided into three sections, corresponding to the three plates of drawing.

Section 1.—*Considerations relative to the general design for a work.*

1. General principles which should govern the trace of works of the kind indicated in the given conditions, such as lines with intervals, continuous lines, têtes-de-pont, &c.

2. Description of the trace represented in the 1st plate. Motives which have led to the proposal of the work in question, founded upon the form of the ground or the nature of the supposed military operations, &c. Object of the various works, and their mutual dependence.

3. Number, character, and position of the guns required for the armament of the work.

4. Maximum and minimum strength of the force which can be employed in the defence of the work.

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5. Dispositions to be adopted (with reference to the necessary provision of *matériel*, and the distribution and movements of the troops) for the attack and defence.

Section 2.—Detailed arrangements of a work.

1. Special objects of the work drawn in the 2nd plate; trace in full of the parapets, barbettes, ramps, embrasures, traverses, &c.

2. Conditions to be fulfilled by the ditch. Approximate calculation of the dimensions to be given to it, taking *foisonnement* into consideration. Means of obviating deficiency or excess in the déblai.

3. Discussion regarding the position and objects of réduits, accessory defences, barriers, descents into the ditch, &c.

4. Position for the magazines; dimensions to be given to them in reference to the supply of ammunition necessary for the armament of the work.

Section 3.—Details of construction.

1. Meaning of the expression "ground for one man," "for two men," &c. Means of ascertaining the nature of the ground. Considerations regarding the relays required for shovelling the earth.

2. Kind, number, and distribution of workmen required for an excavation, according to the character of the ground and the number of relays.

3. Explanatory account of the 3rd plate. Organization of the working parties and method of executing the work, when the durability and strength of the work are the most important considerations, and when rapidity of construction is the first condition to be fulfilled.

4. Which mode of construction is most suitable for the work in question on the given conditions. Calculation of the time, labour, and means required for its execution.

5. Details of the construction of revetments, magazines, barriers, accessory defences, platforms, &c.

PROGRAMME OF THE PRACTICAL EXERCISE IN DEFILADING AND PROFILING FIELD-WORKS.

This exercise comprises, firstly, practical work on the ground, and secondly, a memoir.

(i.) *Practical work on the ground.*

The object of this is to determine, (1) the trace of the interior crest of a work of which the shape and position are known, (2) the reliefs to be given to the interior crest, (3) the profile of the different portions of the work.

The students are distributed in sections of six or eight, who are employed together on the same work, each section being divided, for the execution of the work, into two half-sections. The work traced is a lunette or redoubt of given dimensions. The trace is shown by pickets, and the relief determined by the practical methods of defilade, two profiles being erected on each face. The traverse also is represented by two profiles; the barbettes and embrasures are shown by pickets and tapes. The distance from the salient of the work to the point from which it is defiladed is determined.

(ii.) *Memoir.*

1. Object of defilade. Meaning of the terms dangerous ground, dangerous point, plane of defilade, &c.

2. Position of the dangerous point with reference to the work to be defiladed. Practical method employed on the ground.

3. As on service this method is not always applicable to a detached work, and is never applicable to works of great extent, such as lines, important têtes-de-pont, &c., what measures should most generally be adopted on service to fulfil the indispensable condition of defilade?

4. Methods employed for profiling. Mode of determining barbettes, ramps, profiles at the gorge, embrasures, &c.

5. Means practically employed for determining the distance from the salient of the work to the dangerous point from which the work is defiladed.

Representation of a Siege.

In connexion with the exercises in the general operations of the representation of a siege, two lectures are given by the professor of military art, who is also charged with the superintendence of tracing the lines of circumvallation and contravallation, and with the examination of the memoir which accompanies the exercises.

Programme of the Lectures.

Lecture 1.—Considerations regarding the fortress of Metz; circumstances which might lead to the siege of the place. Strength requisite for the garrison by the besieging army. Investment.

Lecture 2.—Method of tracing the lines of circumvallation and contravallation.

Works of Application.

Trace of the lines. On the termination of the reconnaissance survey, a day is set apart for tracing on the ground the lines of circumvallation and contravallation. A sketch showing the general arrangement of the lines comprised within the district surveyed is furnished to each group of students. In accordance with the indications on this sketch the trace is studied in detail on the ground, marked with pickets and then traversed, in order to be laid down in the halls of study on the rough copy of the reconnaissance survey. One day is allowed for the preparation of the memoir which accompanies this exercise. The memoir is divided into paragraphs, in accordance with the following programme:—

1. Position included within the survey. Description of the position in which the entrenchments are to be traced. Circumstances under which it can be attacked. Its object and importance.

2. Obstacles which protect its front and flanks. Villages, farms, mills, &c., which it would be desirable to occupy or entrench. Artificial inundations which might be constructed.

3. Weak points of the position. Points from which it is commanded.

4. Débouchés favourable for the attack, and more or less practicable for troops of the different arms.

5. Space at disposal for the encampment of the troops on one or two lines. Proximity of water and wood. Buildings contained within the position, and accommodation afforded by them for men and horses Parts of the ground concealed from the view of the fortress.

6. Communications affording means of retreat or of advancing against the enemy. Communications between the different quarters of the army within the lines, and the extent of protection afforded to them. Roads and bridges to be established.

7. Description of the entrenchments proposed. Motives which govern their trace.

8. Execution of the works; successive development of the various portions. Profiles of the works and of the ground on which it is proposed to construct them. Time and number of men required for their construction.

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III.—COURSE OF MILITARY LEGISLATION AND ADMINISTRATION.

The course comprises 12 lectures, unaccompanied by exercises of application, viz.:—

First part. Military legislation	4 lectures.
Second part. Military administration	8 „
Total	12

First Part.

Military Legislation.

Lecture 1.—Component elements of the army. Military establishments. Recruiting. Establishments connected with the instruction of the army.

Lecture 2.—Legal status of military men. Military status. Civil status in time of peace and on active service.

Lecture 3.—Rewards. Gradation of ranks. Promotion. Honorary rewards; Legion of Honour; medals. Pecuniary remuneration under various circumstances. Pensions, &c.

Lecture 4.—Discipline and military justice. Military police; punishments; boards of discipline; boards of inquiry.

Military justice. Constitution and powers of military tribunals. Course of procedure in military law. Pardons; commutation of sentences; reprieves. Infliction of sentences; description of punishments.

Second Part.

Military Administration.

Lecture 1.—Objects of administration. Staff charged with administrative, executive, and control duties. Regulations, course of procedure, formalities to be observed. Agents employed by the administrative authorities. Theory of financial responsibility; warrants; disbursements; records; accounts; control and credit.

Lecture 2.—Duties connected with the pay of the troops.

Lecture 3.—Duties connected with the supply of provisions, fuel and light, and clothing.

Lecture 4.—Duties connected with barracks, billeting troops on the inhabitants, and encamping.

Duties connected with the movement of troops and marches.

The remount establishment.

Lectures 5, 6, and 7.—Duties connected with the medical and hospital service in time of peace and war.

Regimental interior economy. Duties connected with the interior economy of depôts and detachments.

Lecture 8.—Interior economy of artillery and engineer establishments.

IV.—COURSE OF TOPOGRAPHY.

The course of topography comprises two distinct parts, which relate:—

The first, to the art of topographical drawing.

The second, to the art of executing surveys.

These two parts are taught simultaneously, but as the order of the different items of which they are composed is dependent on the order in which the various exercises can be practised at the school, the programme of each part is given separately.

First Part.

Instruction in Topographical Drawing.

This instruction comprises lectures and exercises in drawing. It starts with thorough instruction in the conventional signs used in this kind of drawing on the scales ordinarily employed. This instruction is accompanied by plates giving examples of these conventional signs for the purpose of representing different details.

First Section. Lectures.

The lectures are intended to explain the general principles of instruction in topographical drawing, and the geometrical conditions which govern the construction and reduction of plans. They immediately precede the exercises to which they refer.

Lecture 1 refers to outline plans, the mode of representing ground by contours, conventional signs and scales.

Lectures 2 and 3 refers to the execution of shaded plans by the brush and pen; the effects of light and shadow in the representation of ground; the employment of vertical hachures, and scales of shade representing different slopes.

Lecture 4 explains the methods employed for the reduction of topographical plans, by geometrical construction, and by the mechanical appliance of the pantograph.

Second Section. Exercises in Drawing.

These exercises are intended—

(1.) To teach the students the conventional signs used in topographical drawing.

(2.) To make them expert in the use of the pencil and brush for the production of plans.

(3.) To practise them in the reduction of plans.

The exercises consist of—

(1.) A plate of conventional signs.

(2.) Two plans drawn from copies of a small fortress and its environs, the first on a scale of $\frac{1}{5000}$, the second on a scale of $\frac{1}{10000}$, the ground in each being shaded with the brush.

(3.) Two plans, drawn from copies, executed with the pen, the first on a scale of $\frac{1}{10000}$, the second on a scale of $\frac{1}{20000}$.

(4.) The reduction of an outline plan from a scale of $\frac{1}{2000}$ to $\frac{1}{5000}$.

Thirty-one days are devoted to this preliminary practice in drawing.

Second Part.

Instruction in Practical Surveying.

This instruction comprises—

(1.) Lectures in the amphitheatre.

(2.) Practical lessons or exercises.

(3.) The actual execution of surveys.

First Section. Oral lectures.

The lectures are divided into two classes, which comprise—

(1.) Those which relate to the description of the instruments and the processes employed in surveying.

(2.) Those which explain the method to be followed in the execution of the work, chiefly in regard to surveys of limited extent.

Eight lectures are devoted to the description, use, and adjustment of the instruments employed, and to the processes followed in surveying.

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Lecture 1.—Object of topography. Exact definition of topographical projection. Two main operations—representation of plane surfaces, and levelling. Measurement of distances with the chain and various more exact instruments. Allowance to be made for slopes of ground; reduction of the measured to the horizontal distance. Pacing. Circumstances under which the various modes of measurement may be employed.

Measurements with the stadiometer. Its principle, use, and exactitude.

Lecture 2.—Instruments for measuring angles. Land surveying of a district of limited extent with the chain. More extended surveys; necessity of an outline plan fixing the main points. Methods of fixing these points by traversing, by intersections, and by interpolation. Advantages and disadvantages of the different methods; their verification; conditions to be observed in each in order to secure accuracy in the results.

Method of plotting angles observed, (1) by the protractor, (2) by a scale of chords. Circumstances under which the second method is applicable.

Lecture 3.—The compass; description of the instrument; adjustments required; error of collimation. Double observations; forward and back angles. Liability of the compass to be affected by ground. In accurate surveys it is only suitable for traversing.

Method of registering observations taken; plotting the angles.

Lecture 4.—Description of the ordinary and improved plane-table; mode of setting up the instrument. Various kinds of sight-rulers employed with the plane-table, and their adjustments. Use of the plane-table for traversing, for triangulation, and for interpolation. Solution of practical problems with the plane-table, *e.g.* the determination of a station by three known points, method of fixing a point which falls outside the plane-table, changing the base, &c. Discussion on the employment of the plane-table; its inaccuracy in traversing; its advantages in the case of intersections and interpolation. Comparison of the plane-table and compass.

Lectures 5 and 6.—Instruments and processes employed in levelling. The plumb-level, spirit-level, water-level, levelling telescopes, and more exact instruments. Their adjustments. Mode of ascertaining the difference of level between two points. Method of registering observations taken in levelling.

Lecture 7.—Various methods of taking sections, with the ordinary level and the compass or plane-table, with the levelling compass, by levelled profiles, by ascertaining the slope of the ground with a clinometer. Scales of planes of slope.

Lecture 8.—Determination of the north point. Determination of the meridian by double altitudes and by the pole star. Accuracy of the two methods. Determination of the variation of the compass.

Four lectures are given preparatory to the practical work explaining the processes to be employed in surveys of a limited extent. They describe the method of executing such surveys, both with the compass and the plane-table, and also the mode of making rapid field-sketches, in which only approximate accuracy is required.

Two lectures are devoted to the methods that should be employed in making surveys of considerable extent, the execution of triangulation, the combination of various surveys made by different individuals, the scales to be employed in surveys for various purposes, &c.

Two lectures are given on military reconnaissance sketches; the scales employed in them; the various modes of measuring distances by pacing, by pocket instruments, by the pace of a horse, by the transmission of sound, &c.; portable instruments, the pocket compass, the sextant; the mode of improvising a plane-table and levelling instruments; sketches without instruments; sketches of roads and road reports.

Two other lectures are given preparatory to the execution of the reconnaissance made with reference to the sham siege of Metz, showing how the reconnaissance of a place which it is intended to besiege should be made, and the project of attack should be laid down on a plan.

Second Section.—Practical Lessons.

The object of these lessons is to show the students the mode of using the principal instruments, the precautions to be adopted in their employment, and the elementary operations of topography. They take place on the glacis of the fortifications, and are given to sections of 10 or 12 students at a time, under the direction of the professor and an officer of the staff. Each lesson lasts two hours and a half.

First lesson.—Employment of the plane-table, mode of setting it up and of fixing points by it. Measurement of distances with the chain.

Second and third lessons.—Employment of levelling instruments; levelling operations.

Fourth and fifth lessons. Mode of tracing contours with the levelling compass and the plane-table.

Sixth lesson.—Operations of a rapid field sketch; use of the small plane-table, the compass, and levelling glass. Pacing. Filling in details by eye.

Third Section.—Execution of Surveys.

The object of these exercises is to familiarize the students with the principal instruments and operations of topography. They consist of, (1) outdoor work, during which pencil sketches, registers, and memoranda are taken, (2) the plotting and inking in of the pencil sketches in the halls of study. The outdoor work is carried on under the superintendence of the officers of the staff of the school, who assist the students in their work. The completion of the plans in the halls of study is not commenced until the pencil sketches have been examined and corrected by the professor.

The exercises comprise:—

1. Preliminary practice in the execution of surveys with the compass.
2. First survey with the compass and chain of a small district of tolerably level ground on a scale of $\frac{1}{1000}$, including levelling operations. The students are employed upon this two together. Six days are devoted to the outdoor work, and four days to the completion of the survey in the halls of study.
3. Survey of part of the fortifications of Metz, comprised within a space of 300 to 500 square metres, with the plane-table, on a scale of $\frac{1}{1000}$, including levelling and tracing the contours of the ground. The students are employed two together upon this. The survey is accompanied by a memoir regarding the fortress and its capabilities of defence. Ten days are allowed for the outdoor and four days for the indoor work, including the memoir.
4. Determination of the variation of the compass
5. Second survey with the compass and chain of a district of hilly ground from 400 to 800 metres square, on a scale of $\frac{1}{2000}$. This is also executed by two students together. Eight days are allowed for the work on the ground, and two days for the completion of the plan indoors.

6. Rapid survey of a district from 1,800 to 3,000 square metres in extent with a small plane-table and levelling glass, the distances being measured by pacing. Each student is employed singly on this survey. The plan is drawn in outline in pencil on the ground with the contours traced at five metres apart, and is afterwards shaded and inked in in the halls of study. During the outdoor work, which is carried on at some distance from Metz, the students are entirely absent from the school. Six days are allowed for the outdoor work, and three for the completion of the plan indoors.

7. Reconnaissance survey connected with the operations of the sham siege of Metz. The students, working two together, survey the district of the environs of Metz which would comprise the supposed lines of circumvallation and contravallation, and some of the positions in which the army of observation might have to engage an army attempting to relieve the place. The scale employed is $\frac{1}{10000}$; the ground is represented by contours at five metres apart. The extent of ground surveyed varies from 1,500 to 3,000 square metres, according to its difficulties. Each student is given a portion of the map of France on a scale of $\frac{1}{80000}$, as a basis for his general plan; the details are chiefly filled in by eye. The outdoor work consists of an outline plan in pencil, and notes for the preparation of a descriptive and statistical report. Four days are allowed for the outdoor work, three days for completing the survey indoors and writing the report.

8. Road report and sketch. This exercise is also connected with the sham siege. The students are employed two together in its execution. The work of the first student consists, (1) in drawing a sketch in pencil and shaded, on a scale of $\frac{1}{20000}$, of a road from four to five kilometres in length, showing the ground for 500 or 600 metres on each side; (2) in collecting detailed information regarding the width, state, practicability, &c., of the road, and regarding all the objects which cannot be sufficiently explained by the drawing; (3) in making sketches of any remarkable objects which occur along the road.

   The second student assists the first in the execution of the sketch; paces the distances; and in addition prepares a descriptive report of the road in a tabular form. This report is a work by itself, and is distinct from that executed by the other student; like the other it also contains sketches of any remarkable objects.

   The roads to be reconnoitred are announced by the officer on duty to the students at the morning roll-call; each of them is given a plane-table furnished with a compass and a stand. The students start at once for the reconnaissance, and are obliged to return to the school, with their work completed, before five o'clock in the afternoon.

   A single day only is thus allowed for the work; but on a second day a similar reconnaissance is executed by the same students, reversing the duties which they performed on the first occasion.

TOPOGRAPHICAL OPERATIONS CONNECTED WITH THE SHAM SIEGE.

The object of these operations is the construction of the general plan connected with the project of attack. They comprise principally—

I. The construction of an outline plan showing, by means of points fixed in general out of range of the artillery of the fortress, the relative positions of the most remarkable points on the ground of attack and the salients of the works.
2. A progressive survey of the ground, of the siege works and the fortifications.
3. The combination of the separate surveys made in connexion with these operations in a general plan, showing the progress of the attack as it advances during the whole duration of the siege. The general surveys are made with the plane-table, an instrument which can be extemporised; and the details are filled in with the compass and drawn actually on the ground.

One day is allowed for the general operations; three days for the survey of the ground comprised between the depôts and the second parallel. The remainder of the survey is executed progressively, either after the works have been traced each day, or at the same time as the works are traced. The greater part of the students take part jointly in the various operations.

V.—COURSE OF GEODESY AND DIALLING.

The course is divided into two parts—one special to the students of the engineers, the other common to those of both arms.

The first part comprises, (1) studies connected with the execution of the triangulation of a considerable district, and its connexion with the general triangulation of France, executed under the superintendence of the Depôt de la Guerre; (2) levelling with the barometer.

The second part consists of, (1) the theory of reflecting instruments, (2) the principles of dialling.

Each of these parts comprehends—

1. Lectures in the amphitheatre.
2. Practical lessons or exercises.
3. A work of application.

First Part—Special to the Engineers.

First Section.—Lectures.

The lectures include:—

1. A description of the principal geodetical instruments.
2. The method of constructing a triangulation.
3. The survey and calculations connected with it.
4. The determination of the north point of the plan.
5. The calculation of the co-ordinates of the points, and their construction on the survey.
6. Geodetical and barometrical levelling.

The first lecture relates to the measurement of bases, the instruments employed for exact measurements, the reduction of bases to the horizontal plane; the choice of stations, bench-marks, and other means of indicating stations; the measurement of angles in accurate surveys; the repeating circle, Borda's circle, and other instruments used for measuring angles, with the adjustments required by them.

The second lecture continues the subject of the measurement of angles, the use of the theodolite, the observation of zenith distances and vertical angles with various instruments.

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The third lecture describes the corrections required in observations taken; the reduction of angles to the horizon and to the centre of the station; the errors and corrections due to the instruments not being in a proper state of adjustment.

The fourth lecture relates to the method of calculating spherical triangles, and obtaining the accurate geodetical distance between the various points. It also describes the method of procedure necessary in constructing a triangulation, and the best form and dimensions to be given to the triangles.

The fifth lecture continues the subject of the operations necessary in triangulation on an extended scale; the mode of distributing the errors, and the connexion of separate triangulations; and concludes with an historical account of the operations conducted in connexion with the trigonometrical survey of France.

The sixth lecture explains some of the chief principles of practical astronomy; refraction, parallax, right ascension and declination, sidereal, true, and mean time, &c.; and describes the chief methods of determining an azimuth by observations which require only an approximate knowledge of the exact time.

The seventh lecture relates to the convergence of meridians; the calculation of the rectangular co-ordinates of points, and the solution of various practical problems by this means, such as the determination of the distance between two points the co-ordinates of which are known; the determination of a point by three others; the determination of one base by another the extremities of which are inaccessible. It also includes an account of geodetical levelling; the modes of calculating differences of level by observations of zenith distances, &c.; and of referring altitudes to the level of the sea.

The eighth lecture describes the employment of the barometer in determining differences of altitude; the formula employed; the best form of instrument; the corrections required; and the degree of accuracy attainable by this process.

The ninth lecture points out the order in which geodetical calculations should be performed, the formulæ to be employed, and the verifications required.

Second Section.—Practical Exercises.

The object of these exercises is to familiarize the students with the use of instruments, and to show them the methods of observation. With this object they are made to construct a geodetical plan of the fortress of Metz and its environs, under the direction of the professor. The time spent on the ground at each attendance is two hours and a half. The students attend in sections of five or six.

First exercise.—The measurement of bases with various instruments, and the correction of the measurements.

Second and third exercises.—Measurement of angles with the theodolite; mode of setting up and adjusting the instrument, and of taking observations.

Fourth exercise.—Observation of a zenith distance with the theodolite; adjustments of the instrument. Data required for geodetical levelling.

Fifth exercise.—Use of the repeating circle; mode of setting up, adjusting the instrument, and taking observations with it. Determination of an altitude by the aid of the barometer.

Third Section—Works of Application.

These consist of calculations connected with the triangulation of the fortress of Metz, the survey of which has been made during the practical exercises. Each student (1) calculates two adjacent triangles, starting from a given base, (2) makes the necessary calculations to determine the meridian, (3) calculates the rectangular co-ordinates of the stations. Four days are allowed for this work.

SECOND PART—COMMON TO THE STUDENTS OF BOTH ARMS.

This part consists of—

(1.) The theory and use of reflecting instruments.
(2.) The principles of dialling.

It includes, (1) lectures in the amphitheatre; (2) a practical exercise; (3) works of application.

First Section.—Lectures.

The first lecture refers to double reflecting instruments; the general principles of such instruments. The sextant; mode of using it, adjustments required, the use of the artificial horizon; the pocket sextant and other modifications of the instrument, introduced to adapt it to reconnaissance sketching. The reflecting circle, and its advantages over the sextant.

The second lecture describes some of the simpler operations of practical astronomy; the determination of true and mean time by an altitude of the sun; the observation of this altitude, either with instruments or with a simple plumb-line; the formulæ required for the calculation of the time; the mode of arriving at the same result by a geometrical construction; the determination of a meridian by double altitudes; the determination of the latitude either with instruments or with a plumb-line. The lecture concludes with the general principles of the construction of sundials.

The third lecture continues the subject of dialling, and concludes with an account of the practical operations of tracing a sundial.

Second Section.—Practical Exercise.

This exercise is performed under the direction of the professor, by sections of five or six students at a time. It lasts two hours and a half.

Each student is required to adjust the sextant, to set up the artificial horizon, and to observe with the sextant the angle between two objects, the altitude of these objects above the horizon, and the altitude of the sun.

Third Section.—Work of Application.

This consists of two plates of drawing, in which the students execute, (1) a geometrical construction to determine the time, founded upon the previous observation of the sun's altitude; (2) different constructions connected with the tracing of a sundial on various conditions, based generally on a previous determination of the time. Four days are allowed for this work.

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VI.—COURSE OF SCIENCES APPLIED TO THE MILITARY ARTS.

	Lectures.	Practical Lessons.	Total.
FIRST PART.			
Mineralogy and Geology.			
1st Section.—Mineralogy	0	5	5
2nd Section.—Geology	7	3	10
SECOND PART.			
Technology.			
1st Section.—Materials of construction	5	0	5
2nd Section.—Metallurgy of iron	10	4	14
3rd Section.—Construction of small arms	5	0	5
4th Section.—Construction of ordnance	4	2	6
5th Section.—Manufacture of powder	5	0	5
6th Section.—Pyrotechny	2	4	6
7th Section.—Analysis: Lessons common to both arms	0	3	5
7th Section.—Analysis: Lessons special to the engineers	0	2	
7th Section.—Analysis: Lessons special to the artillery	0	2	
Total	38	25	61

FIRST PART.

MINERALOGY AND GEOLOGY.

First Section.—Mineralogy.

The first four lectures are taken up with an account of the general principles of mineralogy, the characteristic distinctions of minerals, the mode of identifying particular kinds. The students are exercised practically in examining and determining under the superintendence of the professor specimens of the most important minerals, including the silicates, carbonates, sulphates, the chief ores of iron, copper, lead, tin, and zinc, and combustible minerals. The fifth lecture is devoted to a mineralogical account of rocks.

Second Section.—Geology.

Six lectures are occupied in the general principles of geology, and a description of the various strata. Four more lectures, which are given during the geological excursions, are devoted to the applications of geology (1) to topography and military art, showing the relations which exist between the physical features and the geological formation of a country; (2) to the art of construction, in which the chief building materials which may be looked for in any country are described, and the influence of geological conditions upon the foundations for buildings, and on the construction of roads, canals, tunnels, &c., is pointed out; (3) to well sinking and the discovery of water, the regulation of watercourses, inundations, drainage, and irrigation; (4) to mining, chiefly with reference to the discovery of ores of iron, and of coal or other combustible minerals.

SECOND PART.

TECHNOLOGY.

First Section.—Materials of Construction.

The five lectures are taken up with an account of the chief building stones and their suitability for building purposes; limestones, and the process of preparing mortar; hydraulic and other cements; the manufacture of bricks, tiles, pottery, &c.

Second Section.—Metallurgy of Iron.

Lecture 1.—General characteristics of cast-iron, wrought-iron, and steel.

Lectures 2 and 3.—The chief ores of iron, the processes of smelting them, the fluxes and smelting agents employed.

Lectures 4 and 5.—The processes in the production of cast-iron, the various kinds of furnaces in use.

Lectures 6, 7, and 8.—Employment of castings in artillery, manufacture of spherical and elongated projectiles, construction of moulds, chilled castings and other methods employed.

Lectures 9 and 10.—Preparations of wrought-iron, different processes employed, and different kinds of iron produced.

Lecture 11.—Employment of wrought-iron for artillery carriages, manufacture of axletrees and of anchors.

Lecture 12.—Steel; different processes of manufacture, tempering, &c.

Lectures 13 and 14.—Classification and testing of different kinds of iron and steel.

Third Section.—Manufacture of Small-arms.

Four lectures are occupied in an account of the various processes involved in the manufacture and rifling of gun barrels, and in proving, sighting, and stocking muskets. A fifth lecture is devoted to the manufacture of swords, lances, cuirasses, &c.

Fourth Section.—Manufacture of Ordnance.

Six lectures are devoted to an account of the manufacture and proof of guns of brass, cast-iron, wrought-iron, and steel.

Fifth Section.—Manufacture of Powder.

The first three lectures describe the means of preparing and refining saltpetre, sulphur, and charcoal, and the processes employed in the manufacture of powder. The fourth lecture explains the influence of the proportions of the ingredients upon the qualities and strength of the powder. The fifth lecture describes the various methods of proving powder.

Sixth Section.—Pyrotechny.

The first two lectures give a general account of the various pyrotechnical productions employed for warlike purposes. Four more lectures describe the practical operations performed in the laboratory in the preparation of cartridges for small-arms, and of fuses and ammunition of all kinds for guns. These latter lectures are delivered while the students are engaged in performing the actual operations.

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Seventh Section.—Analysis.

1st Lecture. — General principles of analysis, choice of reagents. Apparatus and chemicals required in a laboratory for purposes of analysis in connexion with the duties of the artillery or engineers. Description of the operations generally required in analysis.

2nd Lecture.—Analysis of powder, of its ingredients, and of the products of its explosion.

3rd Lecture.—Practical modes of testing limestones and cements, clays intended for the manufacture of bricks, &c.

These three lectures are common to the students of both arms.

4th Lecture (special to the engineers).—Analysis of limestones, stones for the preparation of cement, mortar, and cements.

4th Lecture (special to the artillery).—Substances employed in the preparation of iron; products of smelting. Mode of testing different kinds of fuel. Analysis of iron ores, cast-iron, wrought-iron, and steel. Analysis of slag.

5th Lecture (special to the artillery).—Analysis of copper, tin, bronze, and alloys.

6th Lecture (special to the engineers).—Articles of food. Analysis of drinking water, and of the principal articles employed in feeding troops. Preservation and adulterations of articles of food.

WORKS OF APPLICATION.

The works of application in connexion with the course are as follows:

(1.) In connexion with mineralogy and geology:

(*a.*) Examination and description of 10 mineralogical specimens.

(*b.*) Three geological excursions, in which the mode of making a geological survey of a country and some of the principal applications of geology to topography and military art are illustrated. Sections of country are also executed by the students. The two first excursions are made in the immediate neighbourhood of Metz, four hours and a half being allotted to each. The third excursion is made to a greater distance, a whole day being occupied in it.

(*c.*) Memoir giving a geological description of the country in the neighbourhood of Metz.

(2.) In connexion with the lectures on technology:—

(*a.*) Three memoirs, the first on the metallurgy of iron; the second on the manufacture either of small arms or of ordnance; the third on the manufacture of powder, or on military pyrotechny.

(*b.*) Practical operations in making moulds in sand for projectiles.

(*c.*) Manipulations in chemical analysis, and account of the analyses performed. Ten attendances of two hours and a half each in the laboratory are devoted to this work.

(*d.*) Practical operations in pyrotechny, consisting of the preparation by the students of cartridges for small-arms, filling shells, case, grape, canister, &c., loading fuses.

VII.—COURSE OF CONSTRUCTION.*

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DIVISION OF THE COURSE.

		Number of Lectures.	
		Artillery.	Engineers.
1st Part.	Elements of brickwork and masonry, and notes on the form, dimensions, and construction of walls, and of different parts of buildings - -	18	18
2nd Part.	Architecture of military buildings -	12	12
3rd Part.	Theory of the stability of constructions. 1st Section. Strength of materials -	6	6
	Theory of the stability of constructions. 2nd Section. Stability of revetments and of arches - -	9	9
4th Part.	Hydraulic constructions - -	20	20
	Total of lectures - -	65	65

FIRST PART.

Elements of brickwork and masonry, and notes on the form, dimensions, and construction of walls, and of the different parts of buildings.

Lecture 1. *Elements of masonry and brickwork.*—Building stones, their different names. Cut stones; their disposition in a mass of masonry, ordinary dimensions, characteristics of good stone. Bricks, ordinary dimensions, characterlstics of good brick. Limes and cements; different sorts of limes, their characteristic peculiarities; burning calcareous stones. Cements.

Lecture 2.—Methods of slacking lime. Theory of the solidification of limes and cements. Sands and puzzolanos; river sand, pit sand, fossiliferous sand; natural and artificial puzzolano; mortars, hydraulic and not hydraulic; theory of the solidification of mortars; proportions of the ingredients, manufacture, hardening.

Lecture 3.—Stuccos and cements. Plaster, composition, manufacture, increase of bulk. Stucco. Bitumen and bituminous cements, composition, preparation, floating on.

Foundations.—General considerations. Compressible and incompressible soils.

Walls.—Inclosure walls, rule for determining their thickness, walls of buildings. Profiles of outer walls and partition walls. Rondelet's rules for calculating their thickness. Results of practice. Drawing of the profile of an outer wall. Determination of the footings of the foundations in the case of a compressible soil.

Lecture 4. *Retaining walls.*—Possible effects of the thrust of earth. Conditions to be fulfilled to ensure stability. Vauban's rule for determining the thickness of revetment walls. Translation of this rule into formulæ and into the new measures. Practical formulæ in general use. Counter-sloping retaining walls. Comparison of the usual profiles. Details of construction.

* Translated by Captain H. Schaw, R.E., Professor of Fortification and Artillery at the Staff College.

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Construction of walls; execution of a building in rubble masonry, in cut stone, in brick, rough casting and plastering, bonding, scaffolding, transport of materials.

Lecture 5.—*Building appliances;* those used in early ages. General rules to be followed in laying out and constructing buildings. Applications.

Openings made in the walls of buildings; names and forms of their parts; construction of a window in a wall of rubble masonry.

Wooden noggin. Disposition and nomenclature of the parts of the framework; their scantling. Filling in with masonry (or brickwork).

Partitions in brick, in pottery, in timber, and in plank.

Lecture 6.—*Cylindrical or semicircular arches.* Nomenclature, directrixes of the intrados and of the extrados of semicircular, segmental or elliptic, and horseshoe arches; their drawing. Thickness at the keystone of normal arches. Thickness at the springing of arches having the extrados in the arc of a circle, and of arches intended to be covered by horizontal or inclined planes. Formula for calculating the thickness of the piers of a semicircular arch. Construction and use of tables for calculating the thickness of piers. Details. Construction of arches in rubble, in brick, and in cut stone. Time and mode of striking the centres.

Lecture 7. *Composite Arches.* — Groined arches and gothic arches; their details, profile of the arch, thickness of supports, construction.

Domes. Details, thickness of the arch, and of the piers, construction.

Flat arches, details, thickness of the *voussoirs,* and of the piers; iron tie rod to resist the thrust; section of this tie. Construction.

Flat arches in brick and cement.

Arches "à l'impériale."

Thickness of the intermediate piers in series of arches, and disposition of the abutment walls in a bomb-proof building.

Lecture 8. *Notes on timber used in construction.*—Bark, pith, ligneous substance, sap, heart. Influence of the soil on the quality of timber. Characteristics of good timber. Diseases and defects of felled trees. Sap wood, double sap (or white wood) drying knots, cross grain, heart shake, star shake, cup shake, bends, dry rot, rottenness, wormholes, foxyness. Age and period for felling. Preservation of timber. Dr. Boucherie's process. Proper timber for construction.

Lecture 9. *Floors.*—Simple and composite. Practical rules for their construction. Modifications of which these rules are susceptible according to the spacing and scantling of the joists and girders. Section of the stiffest beam that can be cut out of a trunk of a tree; drawing of this section. Observations on the use of girders in dwelling houses. Framing of girders and joists. Means of increasing the rigidity of floors. Stirrups, anchors, iron mouldings, cast-iron shoes. Floors of iron and tiles or cement. Cast-iron flooring. Armed girders. Areas of floors.

Ceilings.

Lecture 10. *Stairs.*—Nomenclature. Conditions for drawing stairs. Drawings of stairs. Modifications of the original drawing. Adjustment of the steps and rendering them easy of ascent. Construction of stairs. Stairs supported by one or by two walls. Perrons, stairs outside a building. Open stairs with stringboards, hanging stairs. Wooden stairs in imitation of hanging stairs. Construction of landings. Cast-iron stairs.

Lecture 11. *Carpentry of roofs.*—General conditions which should be satisfied in a construction of carpentry. Composition of the roof of a building. Simple straight roof frames, with a tie beam. Offices of the various parts of the frame. Roof frame with collar beam, or corbels.

Two arrangements. Rule for determining the scantlings of the parts. Palladio's truss; its application to wide spans. High pitched roofs. Types of all the straight trusses in use. Straight trusses in iron and in wood and iron. Examples. Connexion of the trusses together.

Lecture 12. *Trusses without a tie.*—Phillibert de Lorme's truss. Modifications of this truss suggested by M. Lacaze. Colonel Emy's arches of bent wood. Inconvenience of a frame composed of a straight truss and an arch. Colonel Ardant's straight truss without a tie. Formula for computing the scantlings of the parts of roof trusses. Polygonal roof framing. Thrust of roof frames without ties. Calculation of the thickness to be given to the walls which support them.

Lecture 13. *Scarfing and jointing timbers.*—Definitions, tenon and mortice joint, its modifications. Stub mortise (*i.e.*, tenon not passing through). Mortise with tenon passing through. Dove-tailing. Angle joints. Joining pieces which cross each other. Braced or coupled joints. Horizontal and vertical scarfs. Longitudinal connexion of heavy timbers, of planks and scantlings.

Lecture 14. *Permanent roof coverings.*—Conditions to be fulfilled by a good roof covering. Composition of a roof covering. Covering with flat tiles, laths, placing the tiles. Cut slates on the hips. Ridge tiles and pantiles. Slope of the roof. Covering with half-round tiles, ordinary half-round tiles. Roman tiles, Flemish tiles, or "pannes." Tiles employed in the north-eastern departments of France.

Covering with slates. Characteristics by which the quality of slates may be known. Metal coverings. Metals most usually employed. Precautions to be taken when using any sort of metallic covering. Covering with large sheets of zinc. Arrangement of horizontal and longitudinal joints. Slope of the covering. Weight per square metre of various sorts of covering.

Lecture 15.—*Details relative to a dwelling house.*

Cellars; their arrangement; profile of the arching. Drawing of a ventilator. Position for cellar stairs.

Latrines and cesspools.—Precautions to be taken in their construction. Position of latrines. Construction adopted for latrines in military buildings. Means of preventing exhalations from cess-pits.

Chimneys.—Nomenclature. Dimensions of flues; causes of smoke in houses. Most advantageous form of flue, and accessory means for preventing smoking. Disposition of the flues of the different floors.

Baking ovens.—Form and dimensions of the fire-place; its plan and construction.

Lecture 16.—*Joinery and iron-work of buildings.*

Sawn timber floors. Floors *en points de hongrie, à bâtons rompus, à la capucine.*

Parquetting. Wainscoting. Panelled doors. Venetian blinds. Barrack doors with beaded joints; entrance gates.

Barrack beds. Racks and mangers of stables. Ironwork of staircases, and iron gratings.

Lecture 17. *Apparatus for warming and cooking food.*—Hearths. Ash-pan, grate; hot-air flue surrounding a cooking copper; heating surface to be given to a copper. Theoretical velocity of heated air in a tube.

Barrack cooking stoves. Choumara's system, Austrian system.

Summary of the art of ventilating and warming buildings. Apparatus for warming by hot air, by steam, and by hot water.

Lecture 18. *Drawings of buildings.*—Projections employed in the representation of buildings. Plans, sections, and elevations. Mode of

APPENDIX B.

Artillery and Engineer School at Metz.

proceeding in making the drawings. Order in which the drawings should be made. Height at which the horizontal plans of projection are fixed. Drawing instruments. Approximate scale for the drawings. Execution of ground plans, of the plans of the different floors, of the cellars, and of the attics. Elevation. Sections. Large and small details. Notes to be taken on the spot.

SECOND PART.

Architecture of Military Buildings.

Lecture 1. *Decoration without the use of the orders of architecture.*—Principal conditions of decoration. Symmetry, regularity, simplicity, unity, apparent solidity. Special character. Proportion of façades, height of stories, basement. Horizontal lines or string courses. Vertical lines and pilasters. Proportions of doors and windows. Proportion between the openings and blank walls. Arcades and arched windows, cornices, pediments.

Lecture 2.—Arrangement of buildings. Course to be followed in the arrangement. Number of buildings of which the edifice is composed; reasons of convenience which govern the arrangement of the masses. Conditions which should be satisfied in the arrangement of a building. Proper number and dimensions of rooms, suitable relations between them. Exterior and interior communications; suites of rooms on the same floor. Position of the principal parts of buildings; independence of the parts; position and arrangement of the stairs.

Principal and subordinate axes. Verification of the conditions relative to stability.

Lecture 3.—Conditions of convenience to be fulfilled in the arrangement of the principal military establishment.

Arsenals. Names of the principal buildings, their arrangements. Dimensions of the buildings. Their subordinate axes. Examples of arsenals.

Artillery practice grounds. Military establishments for instruction in pontooning.

Lecture 4.—Foundries. Manufactories of arms.

Lecture 5.—Saltpetre refineries, gunpowder manufactories, gunpowder magazines. Details relative to the construction of lightning conductors.

Lecture 6.—Infantry and cavalry barracks.

Lecture 7.—Hospitals, military prisons, and penitentiaries.

Lecture 8.—Corn stores, caves for grain, forage stores, provision stores.

Lecture 9.—Cisterns, their component parts, description of some cisterns, disposition of filters.

Lecture 10.—Military courts of justice. Guard rooms, town gates, hotels and dwelling houses, officers' quarters.

Lecture 11. *Preparatory lesson for the execution of a project of a building.*—Mode of proceeding, preparation of drawings, approximate area of each of the parts. Separation into symmetrical groups in the case of a number of buildings, number of floors, area of ground floor, length and breadth of the building, minor axes, arrangement of each floor, verification of the proper relation between the different floors. Elevation of the building; rough sketches; fair copy; memoir; general details; details of execution.

Lecture 12.—Discussion on the measurement and estimated cost of the project of building.

THIRD PART.

First Section.

Strength of Materials.

Lecture 1.—Strength of prisms to resist extension and compression, elasticity of bodies, module of elasticity, limits of strength to bear a permanent strain.

Resistance to extension and compression of stones, bricks, and similar materials. Strength of woods and metals. Examples.

Lecture 2.—*Cross strain*, some cases in which it occurs; results of experiments.

Resistance of bodies to a strain tending to bend them transversely.—Results of experiment and deductions. Conditions of equilibrium of bodies submitted to a cross strain. Direction and value of the resistance of the molecules. Equation of the neutral axis. Equation of the sectional area; discussions on these two equations.

Lecture 3.—Geometrical method of determining the moments of inertia; application to examining the moment of inertia of different sections. Application of the general equations of equilibrium and cross section to straight beams.

1st. Horizontal beam *fixed* at one end and loaded at the other end, or loaded uniformly.

2nd. Horizontal beam *supported* at both ends and loaded either in the middle or uniformly.

3rd. Horizontal beams *supported* at both ends and loaded with two equal weights equidistant from the centre.

Lecture 4.—4th. Horizontal beam supported at both ends and loaded at any point in its length.

5th. Horizontal beam *fixed* at both ends and loaded either in the middle or uniformly.

6th. Horizontal beam supported at three points at unequal distances, and loaded at the centre of each interval.

7th. Vertical beam, fixed at its foot, loaded with a weight acting at a certain distance from its vertical axis.

Lecture 5. *Cross sections of equal strength.*—Most suitable form for cast-iron beams.

Application of the formula of equilibrium and of cross section to carpentry frames composed of straight pieces. Equation of cross section for a principal rafter, a tie beam, a strut, or a straining beam, a king post.

Application to some existing frames.

Lecture 6. *Polygonal frames.*—Drawing of a polygon in equilibrio. Vertical bracing. Normals to the tiebeam, normals to the curve passing through the angles of the polygon. Thrust of the polygonal frame; cross section of the parts.

Arched frames.—Thrust and cross section of the arch.

Stability of walls which have to resist the thrust of roof frames.

Second Section.

Stability of Revetment Walls and of Arches.

Lecture 7. *Pressure of earth on retaining walls.*—Coulomb's theory. Analytical determination of the thrust. Necessary hypothesis to simplify the calculations. General formula for the amount of the thrust and its movement. Equations of stable equilibrium under the hypotheses of slipping and of rotation.

Lecture 8.—Simplification of the general equations of equilibrium in three particular cases. Determination of the coefficient of stability for

Vauban's profile. Poncelet's simplified formulæ for calculating the thickness of revetments with vertical faces. Transformation of one profile for a revetment into another having the same stability. Vauban's counterforts. The office of counterfort.

Lecture 9. *Geometrical method of determining the thrust of earth.*—Whatever be the profile of the wall and of the mass of earth, taking into account the friction of the earth on the back of the revetment. Determination by geometry of the moment of the thrust. Method to be followed in order to determine geometrically the thickness of a retaining wall at the level of the ground outside it.

Lecture 10.—*On resisting the thrust of earth.* Determination by geometry of the resisting force, and of its moment. Simplification of the geometrical construction, for determining the pressure of earth and the resisting force of earth, and their moments, under certain hypotheses.

Lecture 11.—Point at which the thrust or the resistance to the thrust takes place, first, in the case of a mass of earth with an exterior slope less steep than the natural slope; second, in the case of ordinary revetments of fortifications.

Stability of the foundations of revetment walls.—Compressible soil. The resultant of all the forces ought to pass through the centre of the base. Projection of the footings or depth of the foundations to arrive at this result. Possibility of the slipping of a wall on the bottom of the foundations. Employment of buttresses to oppose this motion. Method of determining the depth of the foundations by *construction*. Depth to which the foundations must be sunk in the case of a moveable soil.

Lecture 12. *Thrust of arches.*—Case of cylindrical arches. Theory of the thrust of arches. Point of application of the thrust in the five possible cases of rupture. Expression for the thrust, and resistances to rotation and to slipping. Mode of proceeding to find by calculation the thrusts and the resistances.

Lecture 13.—Determination by geometry of *thrusts and resistances to rotation.* Mode of solving this question. Construction of lines proportional to the surface of the *voussoirs*, first, in the case of a simple arch without any backing, &c.; second, in the case of an arch with a double sloping extrados, and with or without backing. Construction of verticals passing through the centres of gravity of the voussoirs. Resumé of the operations to be performed.

Determination by geometry of the *thrust* and of the *resistance to sliding.*

Lecture 14.—*Coefficient of stability* of arches at the springing. How to find the profile of an arch for a given coefficient.

Stability of a cylindrical arch on its piers. Thickness of piers. Considerations relative to the value of the coefficient of stability.

Stability of an arch on the *base of the foundations.* Footings and depth of the foundations of the piers. Extension of the geometrical methods for determining the thrusts, and the thicknesses of piers, for groined arches, gothic arches, and domes.

Lecture 15.—Investigation by analysis of the thrust and of the resistances of an arch. First, under the hypothesis of a flat arch. Stability at the springing, necessary load on the haunch. Stability of the flat arch on the piers. Thickness of piers. Section of an iron tie rod which would destroy the thrust. Second, under the hypothesis of a semicircular arch with an arched extrados. Thrusts and resistances. In similar arches the thrust is proportional to the square of the radius.

Fourth Part.

Appendix B.

Artillery and Engineer School at Metz.

Hydraulic constructions.

Lecture 1.—*Classification of soils* on which foundations may have to be made.

Soundings or borings, their object. Different sorts of borings.

Dams of earth, of timber and earth. Case of a moving bottom. Construction on rock. Thickness of dams and clay puddle to be employed. General arrangement of a dam. Bottom springs. Means of stopping or diverting them. Employment of bottom lining to keep out land springs.

Temporary Bridges.—Their height and arrangement. Railways in large works, their disposition.

Lecture 2.—General description of *pumping engines.* Choice to be made between the different modes of draining. Table of the effective power of different pumping engines.

Pile-driving.—"Ringing" pile engine. Preparation of the pile and operation of driving. Pile engine with releasing trigger. Choice between the two sorts of pile-drivers. Determination of the point when to stop driving.

Precautions to be taken in driving piles. Distribution of the piles, their spacing, their cross section.

Arrangement and driving of bay-piles.—Mode of extracting piles and bay-piles.

Execution of a foundation on piles. *Driving piles under water.* Machine for cutting the heads of the piles.

Lecture 3. *Starlings.*—Their object and construction.

Concrete foundations under water.—Preparation and immersion of the concrete. Examples.

Thickness of concrete bottom linings and side walls to keep out water.

Lecture 4.—Inverted arches and timber platforms; their object and construction. Apparatus for masonary inverts.

Foundations by cofferdams.

„ caissons; details of a caisson.

Lecture 5. *Foundations on sand.*—Properties of sand; cases in which its employment is advantageous; examples.

Foundations of short wooden piles, of sand and mortar.

„ pillars of masonry.

„ inverted arches.

„ *"sable bouillant."*

Sort of foundation to be used according to the nature of the soil.

Lecture 6.—Dams for reservoirs. Conditions to be fulfilled in their construction. Earthen embankments. Their profile, revetments to protect the wetted surface. Mode of forming the earth, precautions required in heavy earthworks. Dams composed of earth and masonry combined. Dams of masonry alone. Movements observed in walls. Best profile. Comparison between earthen and masonry dams. Accessory works connected with the dams of reservoirs.

Dams for inundations.—Their profile; protection of their slopes against the action of the water; their construction and accessory works.

Lecture 7. *Batardeaux in the ditches of fortresses.*—Position, profile, details of construction.

Weirs and dams in rivers.—Their object; effects of a weir in a current; advantages of the angular and curved forms; height to be given to a weir, and longitudinal form of the dammed-up portion of the stream. Construction of waste weirs with vertical faces, and with a long slope in-

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clined down stream. Deterioration of weirs. Profile to be adopted according to the nature of the soil.

Lecture 8. *Pile obstructions in rivers.*—Their object; form of the piles. Their spacing and dimensions; details of construction; different sorts of openings in pile obstructions; use of turning gates. Calculation of the dimensions of the two half gates and of the wicket. Carpentry of a turning gate.

Moveable dams with iron shutters. Modifications which make them applicable to retaining water of a greater depth than 2·80 metres (9 feet).

Lecture 9.—Navigable canals; lock gate; mode of working it; form of the lock; profile of the walls of the locks; plan of the hollow quoins for lock gates. Means for filling and emptying the locks; mode of opening the sluices. Carpentry of gates framed in wood. Details of the pivots, collars, and trucks. Arrangements for working the lock gates.

Lecture 10.—Lock gates lined with wood. Curves. Transoms of cast-iron, and sheathing of wood or sheet iron. Iron gates.

River navigation.—Advantages and inconveniences of water carriage; conditions of a navigable river; works for improving the navigation of a river.

Artificial navigation.—Classification of canals; conditions which determine the best position for a canal to branch off from a river. Search for a minimum summit level. Consumption of water at the head of the canal.

Lecture 11.—Chief measures employed for economising water in a lock. Section of a navigable canal.

Heavy cuttings.—Their section. Landslips, and means for remedying them.

Tunnels.—Their section; excavation of a tunnel.

Lecture 12. *Masonry bridges.*—Situation; width of roadway, waterway; size and form of arches; drawing elliptical arches with more than 5 centres; widening of the roadway at the ends of the bridge. Section of the arch. Thickness of the piers and abutments. Apparatus for the arches and for the ends of the bridge; superstructure over the arches; junction with the river banks. Fixed and moveable centres; striking the centres.

Lecture 13. *Timber bridges.*—Composed of straight pieces; arrangement of the guard piles and ice fenders; various dispositions suitable to different spans; counterbracing; arrangement of the roadway.

American bridges.—Original lattice bridge; modifications introduced to increase the strength of the bridge. Calculation of the strength of the trusses.

Carpentry of timber arched bridges.—Construction of the arches; connexion of the roadway beams with the arches. Counterbracing of the arches and of the other parts of the bridge.

Cast-iron bridges.—Different systems; general principles of their construction.

Canal bridges of masonry or cast-iron.

Lecture 14. *Suspension bridges.*—Equation to the curve of the suspending chains and construction of the curve. Strain on the suspenders and their cross section. Influence of the droop on the tension of the suspenders; inconvenience of a considerable droop. Vibrations, and means of controlling them. Limits of the versed sine or droop. Length of the suspenders; causes which make this length variable; means of providing against the effects of this variation. Length of suspending rods. Number of supports to be used. Thickness of the piers. Mode

of securing the ends of the back chains. Advantages and disadvantages of chains made in links and of iron wire suspenders. Some details of construction.

Lecture 15. *Drawbridges.*—Conditions to be fulfilled; general principles of their equilibrium. Drawbridges worked by counterpoised levers above, and by counterpoises in extension of the platform. Theory of these drawbridges. Practical construction. Alteration of the equilibrium and means of remedying it. Inconveniences of the drawbridge with counterpoise levers above.

Lecture 16.—*Drawbridges on the spiral principle,* invented by Captain Derché. Drawing of the spiral. Determination of the radius of the drum for the chains, and of the maximum radius of the spiral.

Lecture 17.—*Drawbridges with variable counterpoises,* invented by M Poncelet. Construction of the counterpoise chains. Mode of working the bridge. Calculation of the counterpoises for the special case when the rear pullies correspond with the axis of the platform. Influence of the nature of the chains; mode of estimating the effect of the weight of the small chains. Construction of the chains of the counterpoise. Arrangement of moveable handrails.

Lecture 18. Short notes on the *motion of the waves of the sea,* and on *their action on shores.*—Undulatory motion of waves; height of waves and depth to which their effect extends; effects of waves on coasts. Tides; spring and neap tides; height of tides and hour of high water; ocean currents; action of the sea on coasts; protection of shelving beaches and cliffs.

Lecture 19. *Harbours.*—Conditions of a good harbour; harbours of the Mediterranean; conditions of a good roadstead: moles and breakwaters; ocean harbours; channel, outer harbour; basins and flood gates; general arrangement of a port.

Lecture 20.—Construction of moles; foundations of rough stone thrown in; profile of a rough-stone breakwater; volume of materials to ensure stability; construction of the mass of a rough-stone breakwater. Subsidence of masonry walls built on rough-stone foundations. Examples of sea walls. 1st. Cherbourg sea wall. 2d. Fort Bayard.

Jetties.—Direction, length, form, spacing, and profile of jetties. Their construction. Openings left in jetties.

APPENDIX B.

Artillery and Engineer School at Metz.

WORKS OF APPLICATION IN CONNEXION WITH THE COURSE OF CONSTRUCTION.

Designation of the Work.	Number of days allowed (1) for the execution of the Work by the Pupils.		Description of the Work.	Observations.
	Artillery.	Engineers.		
(i.) *Drawing of a building.*				
Sketch (out of doors) -	8	8	Representation of an existing building, or of a portion of a building, by plans, sections, and elevations. The memoir is an accurate and critical description of the building which is drawn.	(1.) Every day is equivalent to four and a half hours' work. The sketches are drawn to scales of about $\frac{1}{50}$ for general plans, of $\frac{1}{20}$ for the principal details, and of from $\frac{1}{2}$ to $\frac{1}{4}$ for the minor details. The drawing or fair copy of the sketches is drawn on a scale of $\frac{1}{100}$ for the general plans, &c. This work, which is common to the pupils of the two arms, is an application of the first part of the course.
Design - - -	21 } 31	21 } 31		
Memoir - - -	2	2		
(ii.) *Project for a building.*				
Sketches (first study in pencil).	12	12	Study and composition of a project for a building to suit given data. The sketches, the result of a first study, are drawn only in pencil. The design is the fair copy of these, modified, if necessary. The memoir contains a statement of the rules and principles to be observed in the construction of buildings, and mentions the object of the arrangements adopted in the project. The estimates and measurements which accompany it are made out on the engineer forms; they give the estimate of the cost of constructing the building projected.	The scale of the fair drawing is generally $\frac{1}{200}$ for plans and elevations, and $\frac{1}{100}$ for sections. All the figures showing the general arrangement are on one sheet of paper. The details are on a half sheet, and on scales suitable to the sizes of the objects represented. The project for a building is an exercise on the two first parts of the course, and on the first section of the third part.
Design - - -	18	18		
Details - - -	4 } 42	4 } 42		
Memoir - - -	4	4		
Measurement and estimate.	4	4		
Carried forward -	73	73		

Designation of the Work.	Number of days allowed (1) for the execution of the Work by the Pupils.		Description of the Work.	Observations.
	Artillery.	Engineers.		
Brought forward -	73	73		
(iii.) *Exercise on stability (of walls and arches).*				
Drawing - - -	6 } 9	6 } 9	Determination of the profile to be given to a revetment wall under given conditions. Verification of the stability of an arch, and calculation for the thickness of the piers of this arch. In the memoir is given a short statement of the theories relative to the stability of retaining walls and of arches. Also the results of the application of the theory to the given cases.	The drawing is on a scale of $\frac{1}{100}$. This work is an exercise on the second section of the second part.
Memoir - - -	3 }	3 }		
(iv.) *Project for an hydraulic construction.*				
Sketches - - -	10 } 28	12 } 34	Study and composition of a project for a large artificial work, according to given conditions. In the memoir are stated the principles and results of theories which have been applied in the project, and the arrangements adopted for the foundations and the superstructure are also discussed.	The scale of the drawing is chosen of such a magnitude as to allow the design to be drawn on a single sheet of paper; usually it is $\frac{1}{200}$, or even smaller. The project for an hydraulic construction is an application of the first section of the third part, and also of the fourth part of the course.
Drawing - - -	15 }	18 }		
Memoir - - -	3 }	4 }		
Total - -	110	116		

APPENDIX C.

MILITARY SCHOOL OF ST. CYR.

TABLE of the EMPLOYMENT of TIME for the SECOND (JUNIOR) DIVISION. Winter Course, 1868–9.

TABLE I.—First Year's Pupils.

Days of the Week.	5 a.m.	5.15 to 6.30.	6.30 to 8.15.	8.15 to 9.30 Lectures in the Amphitheatre.	9.30 to 9.45.	9.45 to 11. Study in the *Salles d'étude*.	11 to 12.15. Drawing.	12.15 to 1.45.	1.45 to 3.45.	3.45 to 4.15.	4.15 to 5.15.	5.30 to 6.45.	7 to 8.15.	
Monday	Rise at 5. Entrance into the halls of study.	Study in preparation for the day's lecture, or interrogations.	Breakfast; washing, &c. Roll call; inspection by the officers of the week; parade.	Descriptive geometry and numerical applications.	Recreation. Parade for study.	Revision of the day's lecture, completion of notes, and interrogations.	Geometrical drawing.	Dinner. Recreation. Dancing and singing on Wednesdays and Saturdays.	Drill.	Recreation.	Military study.	Instruction in the drill-book (*théorie*).	General study (*étude libre*), language lessons, or interrogations.	German.
Tuesday				Geography.		Ditto.	Geographical drawing.				Drill-book.	General study (*étude libre*).		German or English.
Wednesday				Physics and chemistry.		Ditto.	Geographical drawing for half the division; landscape drawing for the other half.				Military study.	Drill-book.		German.
Thursday				History.		Ditto.	Landscape drawing for half the division; geographical drawing for the other half.				Drill-book.	Drill-book.		German or English.
Friday				Physics and chemistry.		Ditto.	Geometrical and machinery drawing for half the division; landscape drawing for the other half.				Military study.	General study (*étude libre*).		
Satur day				Literature		Ditto.	Landscape drawing for half the division; geometrical and machinery drawing for the other half.				Drill-book.	Drill-book.		

Sunday	5 to 6.30.	6.30 to 8.	8 to 10.	10 to 10.30.	10.30 to 11.	11 to 11.30.	11.30 to 7.30.	7.30 to 8.30.
	Rise. tudy.	Washing, cleaning things, breakfast.	Inspection and general parade.	Recreation.	Mass.	Dinner.	Recreation, visits from friends, *promenade militaire*, or study.	Supper, recreation, bed.

TABLE of the EMPLOYMENT of TIME for the SECOND (JUNIOR) DIVISION. Summer Course, 1868.

TABLE II.—First Year's Pupils.

Days of the Week.	4.45 A.M. to 5.	5 to 7.	7 to 8.15.	8.15 to 9.30 Lectures in the Amphitheatre.	9.30 to 9.45.	9.45 to 11. Study in the *Salles d'étude.*	11 to 12.15. Drawing.	12.15 to 1.45.	1.45 to 3.45.	3.45 to 4.10.	4.10 to 5.25.	5.25 to 5.40.	5.40 to 7.	7 to 8.15.	8.15 to 9.
Monday	Rise and breakfast.	Drill.	Washing, cleaning things, &c. Inspection. Parade for lecture.	History.	Recreation. Parade for study.	Revision of the day's lecture, completion of notes, and interrogations.	Geometrical drawing.	Dinner, recreation. Singing on Mondays and Thursdays. Fencing, dancing. Parade for study.	General study (*étude libre*). Interrogations. Languages.	Recreation.	General study (*étude libre*).	Recreation.	Military study and gymnastics.	Military study. Examination in the drill-book. Gymnastics. Fencing. Riding.	Supper. Recreation. Fencing. Bed.
Tuesday		Do.		Geography.		Ditto.	Map drawing.						General study (*étude libre*).		
Wednesday		Do.		Legislation.*		Ditto.	Landscape drawing for half the division; geographical or machinery drawing for the other half.						Military study and gymnastics.		
Thursday		Do.		History.		Ditto.	Geographical or machinery drawing for half the division; landscape drawing for the other half.						Ditto.		
Friday		Do.		Legislation.*		Ditto.	Geometrical drawing for half the division; landscape drawing for the other half.						General study (*étude libre*).		
Saturday		Do.		Literature.		Ditto.	Landscape drawing for half the division; geometrical drawing for the other half.						Military study and gymnastics.		

Sunday	5.45 to 7.15.	7.15 to 8.30.	8.30 to 11.	11 to 11.30.	11.30 to 7.30.	7.30 to 8.30.
	Rise. Washing, &c. Breakfast.	Inspection. Mass.	Practical instruction in duty. General study.	Dinner.	Recreation, visits from friends, *promenade militaire* or study.	Supper, recreation, bed.

* Legislation was in 1868 exceptionally introduced into the latter part of the first year's course of study; it usually belongs to the second year's course.

MILITARY SCHOOL OF ST. CYR.

TABLE of the EMPLOYMENT of TIME for the FIRST (SENIOR) DIVISION. Winter Course, 1868–9.

TABLE III.—Second Year's Pupils.

Days of the Week.	5 A.M. to 5.15.	5.15 to 6.30.	6.30 to 8.15.	8.15 to 9.30. Lectures in the Amphitheatre.	9.30 to 9.45.	9.45 to 11. Study in the *Salles d'étude*.	11 to 12.15. Drawing.	12.15 to 1.45.	1.45 to 3.45.	3.45 to 4.15.	4.15 to 5.15.	5.30 to 6.45.	7 to 8.15.	
Monday	Rise at 5. Entrance into the halls of study.	Study, in preparation for the day's lecture, or interrogations.	Breakfast; washing, &c. Roll call; inspection by the officers of the week; parade.	Administration.	Recreation. Parade for study.	Revision of the day's lecture, completion of notes, and interrogations.	Fortification plates for half the division; landscape drawing for the other half.	Dinner. Recreation. Fencing and dancing,	Drill.	Recreation. Voluntary fencing.	Military study and fencing.	Instruction in the drill-book (*théorie*).	General study (*étude libre*), language lessons, or interrogations.	German.
Tuesday				Topography.		Ditto.	Ditto.				Ditto.	General study (*étude libre*).		German or English.
Wednesday				Fortification.		Ditto.	Fortification plates.				Ditto.	Drill-book.		
Thursday				Military art.		Ditto.	Topographical drawing.				Ditto.	Ditto.		German.
Friday				General study (*étude libre*).		Topographical drawing.	Ditto.				Drill-book or fencing.	General study (*étude libre*).		German or English.
Saturday				Artillery.		Revision of the day's lecture, completion of notes, and interrogations.	Fortification plates.				Military study or fencing.	Drill-book.		

Sunday	5 to 6.30.	6.30 to 8.	8 to 10.	10 to 10.30.	10.30 to 11.	11 to 11.30.	11.30 to 7.30.	7.30 to 8.30.
	Rise. Study.	Washing, cleaning things, breakfast.	Inspection and general parade.	Recreation.	Mass.	Dinner.	Recreation, visits from friends, *promenade militaire*.	Supper, recreation, bed.

TABLE OF THE EMPLOYMENT of TIME for the FIRST (SENIOR) DIVISION. Summer Course, 1868.

TABLE IV.—Second Year's Pupils.

Days of the Week.	4.45 a.m. to 5.	5 to 7.	7 to 8.15.	8.15 to 9.30. Lectures and Study.	9.30 to 9.45.	9.45 to 11. Study in the *Salles d'étude*.	11 to 12.15. Drawing.	12.15 to 1.45.	1.45 to 3.45.	3.45 to 4.10.	4.10 to 5.25.	5.25 to 5.40.	5.40 to 7.	to 7. 8.15	8.15 to 9.
Monday	Rise and breakfast.	Drill.	Parade for Inspection. Washing, cleaning things, &c. lecture or study.	General study (*étude libre*).	Recreation. Parade for study.	General study (*étude libre*).	Fortification plates for half the division; landscape drawing for the other half.	Dinner. Recreation. Singing on Mondays and Thursdays. Dancing. Fencing. Parade for study.	General study (*étude libre*), and interrogations. Military hygiene. Modern languages.	Recreation.	General study (*étude libre*). Practical work for the different companies by turns.	Recreation.	Military study and examination in the drill-book.	Military study. Drill-book. Fencing. Musketry and artillery practice. Riding. Veterinary science. Practical work for some of the companies.	Supper. Recreation. Fencing. Bed.
Tuesday		Do.		Military art.		Study on the lecture, and interrogations.	Landscape drawing for half the division; fortification plates for the other half.						General study (*étude libre*).		
Wednesday		Do.		General study (*étude libre*).		General study (*étude libre*).	Fortification plates.						Military study and examination in the drill-book.		
Thursday		Do.		Military art.		Study on the lecture, and interrogations.	Topographical drawing.						Ditto.		
Friday		Do.		General study (*étude libre*).		General study (*étude libre*).	Do.						General study (*étude libre*).		
Saturday		Do.		Do.		Do.	Fortification plates						Military study and examination in the drill-book.		

Sunday	5.45 to 7.15.	7.15 to 8.30.	8.30 to 11.	11 to 11.30.	11.30 to 7.30.	7.30 to 8.30.
	Rise. Washing, &c. Breakfast.	Inspection. Mass.	Practical instruction in duty. General study.	Dinner.	Recreation. Visits from friends, *promenade militaire*, or study.	Supper, recreation, bed.

APPENDIX D.

SCHOOL OF ST. CYR. PROGRAMMES OF THE COURSES OF INSTRUCTION.

FIRST YEAR.

I.—COURSE OF DESCRIPTIVE GEOMETRY.

(Fifteen Lectures.)

Scales; explanation of the principles on which they are constructed; their construction; account of the scales generally used in topographical and fortification drawings, and for geographical maps.

Figured Plans.

Representation of a point, of a straight line; determination of a point in a line, the figured height or the projection of the point being shown.

Inclination of a straight line. Through a given point to draw a parallel to a given line; conditions under which two straight lines intersect.

Representation of a plane; scale of slope. In a given plane to determine a point or a straight line of which the projection is given; to draw a plane containing two straight lines which intersect one another, or which are parallel to each other; to draw a plane passing through a given point and parallel to a given plane; to construct the intersection of two planes, given either by their scales or by any two horizontals; the reason why in practical drawing the scales of slope of planes are often omitted, and the planes are only determined by two horizontals; to find the intersection of two straight lines situated in the same vertical plane; through a given point to draw a perpendicular to a plane and to determine its intersection with the plane; through a given straight line to draw a plane at a given inclination; through a given point in a plane to draw a straight line in the plane and inclined at a given angle.

Cylindrical and Conical Surfaces and Surfaces of Revolution.

Definition of cylindrical and conical surfaces; their generation, their representation; they can be produced or extended.

Surfaces of revolution—spheres, ellipsoids; their generation, their representation; they cannot be extended.

Definition of a tangent plane. To draw a plane tangent to a cylinder and a cone, through a point on the surface, or without it, or parallel to a given straight line. Tangent plane to a sphere; position of the points of contact of planes tangent to a sphere and parallel to a given line. Application of the theory of tangent planes to the determination of shadows; line of separation between light and shade; line or point of the highest light; penumbra, reflected light, brilliant points, shadows.

Regular Surfaces.

Definition of regular surfaces; their division into crooked surfaces, and those which can be produced or extended; employment of the crooked surface in fortification; its representation.

Perspective.

Linear perspective; principles; picture, horizontal line, point of sight, vanishing point, ground line. General principles for drawing an object in perspective. Vanishing point of a horizontal line perpendicular to

the plane of the picture, and of any line whatever. Scale of depth. Aerial perspective.

Drawings.

1st Plate.—Printing.
2nd Plate.—Scales.
3rd Plate.—Through a given point to draw a plane at a given inclination, and to draw a perpendicular to this plane from a point without it.
4th Plate.—Tangent planes to a cylinder and cone.
5th Plate.—Distribution of light and shade on a sphere.

APPENDIX TO THE COURSE OF DESCRIPTIVE GEOMETRY. LECTURES ON NUMERICAL APPLICATIONS.

(Ten Lectures.)

Arithmetic (Three Lectures).

Oughtred's rule for an abridged process of multiplication.
Abridged process for the extraction of the square root.
Examples in the four fundamental rules of arithmetic, and in ratio and proportion.
Arithmetical and geometrical series. Use of tables of logarithms. Compound interest and annuities.
Problems connected with fortification:—to find the garrison for a square redoubt; to find the side of a square redoubt intended for a garrison of given strength; to find the size of a field oven intended to bake a given number of rations of bread; to find the number of men that can be lodged in a room of given dimensions.

Geometry and Mensuration (Three Lectures).

To trace on the ground through a given point a line parallel to a given line. At a given point to erect a perpendicular to a given line.
General principles of the mensuration of areas, of the surfaces of cones and spheres, and of the volumes of parallelopipeds, pyramids, cones, cylinders, and spheres; application of these principles to problems connected with fortification, such as the calculation of the dimensions of an excavation, the calculation of remblai and deblai, &c.

Algebra (Two Lectures).

Theory of quadratic equations. Quadratics of one and two unknown quantities. To find the number of terms and the last term of an arithmetical series. To describe in a given sphere a cone, the volume of which shall be one-fourth that of the sphere, also a cone of maximum volume. To determine the minimum area of a square described within another square, and the maximum area of a rectangle described within a circle.
Problems connected with fortification:—to determine the width of the ditch of a field work of which the depth and slopes are given; to determine the depth when the width is given.

Trigonometry (Two Lectures).

Review of the fundamental formulæ. Use of tables of logarithms.
Measurement of distances:—to find the distance to an inaccessible point, and the distance between two inaccessible points; to determine the position of a point in reference to three other points the distances between which are known; to reduce a measured base to the horizon. Measurement of heights:—to determine the height of an object when the base is accessible and when it is inaccessible; to find the height of a mountain.

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Solution of triangles:—to solve a triangle when one angle, the opposite side, and the sum or difference of the other two sides are given; to solve a triangle when one angle, an adjacent side, and the sum or difference of the other two sides are given; to solve a triangle when the area and the angles are given, and when the perimeter and the angles are given; when the sides of a quadrilateral which can be inscribed in a circle are given, to find its angles and area.

II.—COURSE OF PHYSICS AND CHEMISTRY.

(Forty Lectures.)

FIRST PART.—PHYSICS.

Mechanics.—General principles of dynamics; laws of gravity; uniformly accelerated motion; the parabolic theory as applied to the flight of projectiles. Velocity of projectiles; effects of the resistance of the air. Impact of bodies. Centrifugal force. Theory of the pendulum; law of gravitation. Centre of gravity; application of the principles to the recoil of firearms. Application of the principles of dynamics to shipbuilding; paddle and screw steamers.

Simple machines; the wheel and axle; capstan; lifting-jack; gyn; crane; pile-driving machine, &c. Drawbridges of various kinds.

General principles of hydrostatics; transmission of pressure in liquids. The hydraulic press. Artesian wells. Canals. Waterwheels. Dredging machines. Compressibility of liquids. Capillarity.

Elastic force of gases; law of Mariotti. Composition of the atmosphere; the barometer. Mixture of gases; solution of gases in liquids. Liquefaction and solidification of gases. Balloons; their employment in war for purposes of reconnaissance.

Heat.—Definition of temperature: thermometry. Law of Gay-Lussac. Heat of combustion; Rumford's experiments. Ebullition. Tension of vapours. Latent heat of vaporisation. Density of vapours. The steam-engine. Locomotives. Calorimetry; Melloni's pile. Radiant heat; reflection and transmission of heat; athermanous and diathermanous bodies. Wells' theory of dew. Conductibility of heat. Hygrometry; the hygrometric state; different kinds of hygrometers. Clouds, snow, rain, rain-gauges. Theory of the mechanical equivalent of heat. Different methods of heating and ventilating rooms.

Electricity.—Frictional electricity; theory and general principles of the subject. Description of apparatus; condensers; the Leyden jar; the plate electrical machine; the electrophorus; the electroscope. Lightning conductors. Magnetism; variation and dip of the needle. Voltaic electricity; theory of the pile; luminous, heating, and chemical effects. Electroplating. Different kinds of batteries. Electro-magnetism; solenoids and conductivity. Ohm's law. The electric telegraph; Morse's instrument; needle telegraphs; application of telegraphy to military purposes; description of a field telegraph equipment; mode of extending and fixing the wires, &c. Submarine cables. Electrical induction; Ruhmkorff's coil. Application of electricity to determine the velocity of projectiles; the electro-ballistic apparatus and other instruments.

Acoustics.—Propagation of sound in the air; velocity of its passage; laws of harmony; vibration of strings; sense of hearing.

Optics.—Transmission of light; velocity of its passage. Laws of reflection; mirrors. Dispersion of light; prisms; lenses. Lighthouses. The electric light. The solar spectrum. Theory of sight; optical illusions. The *camera obscura*. Telescopes; microscopes. Theories of emission and undulation. Double refraction; polarised light.

Meteorology.—Thunder, lightning, hail, the Aurora borealis. Temperature and climate; heat of the sun, central heat of the earth; winds; isothermal lines; the Gulf stream. Anemometers. Volcanoes and volcanic districts; earthquakes.

Second Part.—Chemistry.

General principles of chemistry; combination, affinity, cohesion; simple and compound bodies; distinction between the metals and metalloids. Laws of definite and multiple proportions. Chemical equivalents. Nomenclature. Salts, acids, bases, &c. Laws of Gay-Lussac and of Dulong and Petit.

Oxygen, azote, hydrogen, water, atmospheric air, sulphur, chlorine, iodine, bromine, fluorine, cyanogen, carbon, combustible minerals, hydro-carbons, illuminating gas, silica, phosphorus, arsenic.

The metals and their salts; alloys; oxides; laws of Berthollet. Potassium; sodium, sea-salt, saltpetre, manufacture of gunpowder; calcium, carbonate and sulphate of lime; magnesia, alumina; mortars, cements, manufacture of glass, porcelain, and pottery. Iron and its ores, steel, zinc, tin, copper, lead, gun-metal. Mercury and fulminates, silver, gold, platinum.

Organic chemistry; general principles; sugar, alcohol, acetic acid; fermentation; ether, chloroform; benzine, caoutchouc, gutta percha; camphor, resin; fatty substances, glycerine, stearic acid, butter, oils, soap; organic acids—tannic, tartaric, and citric acid; quinine, morphine, nitro-benzine; animal substances—gluten, albumen, gelatine, fibres and tissues. Gun-cotton and collodion. Articles of food and their adulterations; wine, beer, brandy, vinegar, sugar, oil, milk; cereals; wheat, barley, Indian corn, rice; flour, qualities of good bread; mode of judging of meat.

Photography.—Description of the wet collodion process; manipulations required in taking the negative; preparation of paper for printing; process of printing, exposure, &c.

Application of photography to military reconnaissance proposed by Major Laussedan. Employment of the dry process; transport of materials. By taking two views at each of four stations, the horizontal projection of the ground and the relative altitudes of different objects can be obtained with remarkable accuracy. Principles on which this result depends.

III.—COURSE OF MILITARY GEOGRAPHY AND STATISTICS.

In connexion with this course 15 drawings are executed by the students. These drawings are not intended to be accurate maps drawn according to scale; their object is to give a general representation of the chief features of the principal countries of Europe to which they refer. The chains of mountains, rivers, canals, strategical roads, railways, and chief towns are indicated, and all names referred to in the course of lectures must be shown. Each map is accompanied by a sheet on which, under the head of "Military Applications," is given either a statement of the military statistics of the country represented, or a concise account of the military operations which have taken place in it, and of the main roads which traverse it.

First Part.—General Geography of Europe. France and Algeria.

(Fifteen Lectures.)

Physical geography of Europe; general watershed line, and great natural divisions. Political geography of Europe; elements of national

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strength—territory, population, wealth, military forces, political institutions. Division of Europe according to political states, races, and religions. Classification of states according to their political importance.

Physical geography of France: watershed line; natural and political divisions.

Basin of the Rhine (left bank), and secondary basin of the Scheldt. Basin of the Seine and secondary basin of the Somme. Basins of the Loire, the Garonne, and the Adour. Basin of the Rhone.

Political geography of France; administrative, judicial, and ecclesiastical divisions; finances; military budget; military divisions; classification of fortresses; great military establishments.

Frontiers of France; maritime frontiers; eastern and northern frontiers; frontier of the Pyrenees.

Algeria; general physical features, mountains, and rivers; climate and productions; population; political and military institutions.

Second Part.—Foreign Countries.

(Sixteen Lectures.)

Germany; basins of the Rhine (right bank) and the Weser; basins of the Elbe and the Oder. Political and military institutions of Prussia. Basin of the Danube. Political and military institutions of Austria.

Ottoman Empire; Greece; the Black Sea; the Crimea.

Italy; basins of the Po, the Adige, &c.; the Alps and their chief passages; Southern Italy.

Spain and Portugal; general physical features of the peninsula, and description of the basins formed by the chief rivers.

Russia; basins of the Vistula, Duna, Dnieper, and Volga; geography of the Black Sea; general statistics of the Russian empire, political institutions, &c.

British Isles; general geography; political, military, and naval institutions; account of the chief foreign possessions and colonies of Great Britain.

General review of the physical geography of Asia, chiefly with reference to the Ottoman, British, and Russian possessions in that continent. China and Japan.

General account of Africa, Australia, and America; the United States, Mexico, Brazil, and South American Republics; British and Russian possessions, and other European colonies in America.

IV.—COURSE OF LITERATURE.

(Thirty Lectures.)

Lectures 1 and 2.—Grandness of the literature of Greece and Rome; their influence on modern civilization, and especially on that of France; the place which they hold in education.

Lectures 3 and 4.—Origin of the modern languages; formation of the French language. Troubadours and bards; chroniclers; foundation of universities. Intellectual pre-eminence of France, commencing with the 13th century.

Lectures 5 and 6.—Villehardouin, Joinville, Froissart; epic narratives, poetical legends, mysteries; Dante, Petrarch, and Boccaccio; the Michelungen; Chaucer; or the middle ages of literature in France, Italy, Germany, and England. Preponderance of sentiment in art.

Lecture 7.—Ariosto, Rabelais, and Cervantes; reaction against the middle ages.

Lectures 8 and 9.—Tasso and Camoens; at a later period, Paradise Lost, the Henriade, and the Messiade, or the substitution of the conventional epic poem for the primitive epics. Machiavelli and Comines, or the substitution of political history for chronicles. Preponderance of reflection in art.

Lecture 10.—Amyot, Montaigne, Rousard, or the imitation of the ancient authors; Malherbe and J. L. Balzac, or the introduction of the noble style in literature.

Lectures 11, 12, 13, and 14.—The age of Louis XIV. before Louis XIV.; Corneille and classical tragedy; Descartes and the philosophic style; Pascal's letters; the Cardinal de Retz and the literature of memoirs; Madame de Sévigné and the epistolary style.

Lectures 15, 16, 17, and 18.—The age of Louis XIV.; Molière and the comedy of character; Regnard and Lesage, or the comedy of manners; Racine, Boileau, and Lafontaine. La Bruyère and the delineation of character. Bossuet, Bourdaloue, and Flechier, or the eloquence of the pulpit.

Lecture 19.—Shakspeare, Lopez de Vega, and Caldéron; the modern drama.

Lectures 20, 21, 22, and 23.—The 18th century; Voltaire, Montesquieu, Rousseau, and Buffon.

Lecture 24.—Transition from the 18th to the 19th century; Bernardin de St. Pierre, André Chénier, Madame de Staël, Chateaubriand.

Lecture 25.—The golden age of German literature; Klopstock, Lessing, Herder, Schiller, and Göthe; Körner.

Lecture 26.—Lord Byron, Walter Scott, Cowper; Manzoni and Pellico.

Lectures 27, 28, 29, and 30.—Influence of the literature of foreign countries on that of France after 1815; the romantic school, Lamartine, Victor Hugo, De Vigny, Musser. Parliamentary eloquence; the two Pitts, Sheridan, Burke, Fox, and Canning; General Foy, Royer Collard, Guizot. Revival of historical literature; Augustin Thierry, Thiers.

Appendix to the Course of Literature.

(Two Lectures.)

Military correspondence, its divisions, its literary character.

Correspondence conducted by officers in subordinate positions; official forms used in addressing authorities of various ranks. Correspondence between civil and military officials.

Military oratory; proclamations and manifestoes, harangues to troops, general orders, bulletins.

Memoirs and special reports in connexion with military reconnaissance; directions in regard to their preparation and arrangement.

The written compositions required from the students are of the following character:—The literary analysis of one of Lafontaine's fables; of one of the characters or plays of Corneille, Racine, or Molière; of one of Boileau's letters, La Bruyère's characters, or Bossuet's sermons. The discussion of one of La Rochefoucauld's maxims or Montaigne's reflections.

V.—COURSE OF MODERN HISTORY.

(Forty-two Lectures.)

Lecture 1.—Ethnographical origin of the French nation.

Lecture 2.—Growth of the territory of France, extension of the frontiers to the Alps and the Rhine.

Lecture 3.—France in the middle ages; literature, science, and art. The feudal system. Growth of the power of the kings.

Lectures 4 and 5.—Progress of military institutions; the feudal armies; the English army under Henry the Second and Edward the Third; changes consequent upon the introduction of firearms; standing armies in France up to the time of Richelieu.

Lectures 6 and 7.—Modern France. The revival of letters. Contest of France with the house of Austria; the Thirty Years' War. State of Europe in 1661.

Lectures 8 and 9.—Literature, science, and art in the 17th century.

Lectures 10, 11, and 12.—Internal affairs of France during the reign of Louis XIV.; Louvois, Colbert, Vauban.

Lectures 13, 14, and 15.—Foreign politics of Louis XIV.; his wars; their causes and results; treaties, acquisitions of territory, alliances.

Lecture 16.—Religious affairs; Jansenism; Declaration of 1682; Revocation of the Edict of Nantes.

Lectures 17, 18, and 19.—Reign of Louis XV.

Lectures 20 and 21.—Review of the history of England from the time of Elizabeth to the present day. Growth of the English constitution. Formation of the Indian empire, and chief wars conducted by the English in India.

Lectures 22, 23, and 24.—General review of the history of Austria from the time of Rudolph of Hapsburg, of that of Prussia from 1640, and of that of Russia from the time of Peter the Great.

Lecture 25.—History of the United States and of Canada from the time of the first colonization of America.

Lectures 26 and 27.—Progress of science in the 18th century. Decay of the fine arts. Revolution in philosophy in France. Influence of French thought on Europe.

Lecture 28.—Louis XVI. and the Constituent Assembly. The Revolution.

Lectures 29 and 30.—The Convention and the Directory.

Lectures 31 and 32.—The Consulate.

Lectures 33, 34, 35, and 36.—The Empire. The First Restoration. The hundred days.

Lectures 37, 38, and 39.—The Second Restoration. The treaties of 1815. Antagonism between the *ancien régime* and the new ideas in France and Europe. Reign of Charles X. Revolution of 1830.

Lectures 40, 41, and 42.—Consequences of the revolution of 1830 in the chief countries of Europe. Reign of Louis Philippe; internal politics; foreign affairs. Conquest of Algeria. Revolution of 1848, and re-establishment of the Empire.

Three written compositions are required from the students on subjects selected from the course of lectures on history.

SECOND YEAR.

I.—COURSE OF TOPOGRAPHY.

The course consists of three parts—(1) lectures, (2) drawing, (3) execution of surveys and reconnaissances.

FIRST PART.—LECTURES (15 in number).

Lectures 1, 2, and 3.—General principles of topography; mode of executing plans and copying drawings.

Definition and objects of topography; its division into regular and irregular topography. Memoirs.

(i.) *Regular Topography.*

Representation of horizontal surfaces; levelling. Scales, their construction. Triangulation; form to be chosen for the triangles. Selection and measurement of the base. Details regarding the construction of the general plan. Selection of a datum line for levelling. Figuring altitudes; contours; equidistant intervals between them; principal and intermediate contours.

Physical features of ground; mamelons, ridges, valleys, cols. Points the level of which should be determined in order to facilitate marking out the principal contours. Substitution of hachures for contours. Representation of strongly and slightly marked ground by hachures. Precipices, rocks. Scale of shade.

General view of the operations required in the construction of plans. Method of copying and reducing drawings.

Lecture 4.—Theory of instruments. Formation of images on a mirror or lens adapted to topographical instruments.

Instruments for measuring distances; the chain; the stadiometer; reduction of measured distances to the horizontal distance. Measurement by pacing.

Lectures 5, 6, and 7.—Instruments for the measurement of angles. The plane table and sight ruler; problems which can be solved with these instruments; to find the direction of the meridian; to determine the angle which the side of a triangle makes with the meridian. The graphometer and vernier; manipulation and adjustment of the instrument; limits within which it can be employed.

The protractor. The compass. Method of finding with the compass and the protractor the projection of an inaccessible point. The compass with fixed graduations. Adjustment of the compass. The *déclinatoire.** Limits within which these instruments can be employed. The cross staff.

Lectures 8, 9, and 10.—Levelling instruments. The plumb-level, water-level, and spirit-level; limits within which these instruments can be employed. Simple and compound levelling. Execution of a section of a country. Register of levelling observations.

The clinometer; method of adjusting this instrument or finding its error of collimation according as it is of the old or new pattern. Formulæ for the calculation of differences of level; correction required for the height of the instrument. Maissiat's tables.

Lecture 11.—Execution of a regular survey. Determination of the main points with the graphometer. Measurement of the base. Calculation of the sides of the triangles and of the co-ordinates of their points.

Determination of the main points with the plane-table. Filling in the details with the plane-table and the *déclinatoire,* or with the compass.

Lectures 12 and 13.—General account of the levelling operations required. Determination of the altitudes of a few points on an extensive plan, and of the principal points required for levelling. Mode of keeping field books. Method of determining the principal contours, either approximately or by an exact process.

Summary of the operations required in a regular survey.

(ii.) *Irregular Topography.*

Lectures 14 and 15.—Utility of field sketching; scale employed. Construction of the general plan; measurement of distances by counting mile-stones, by pacing, by the pace of a horse, by the time employed

* *i.e.*, the compass fixed on a plane table.

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in traversing a given distance, by the rate of the passage of sound. Measurement of angles; plane-table and sight-ruler employed in reconnaissances; the sextant; Burnier's and Hossard's compasses.

Levelling; Buxel's level, levelling glass. Field sketches with instruments; eye-sketches; sketches from memory and from information obtained. Sketches and reports of roads.

(iii.) *Memoirs.*

Their object; mode of drawing them up. Topographical, statistical, and military information to be collected on the ground. Slopes accessible to the different arms, &c., &c.

Second Part.—Drawings.

For the students of the first year.

1. Plate of conventional signs.
2. Copy of a drawing with pencil hachures; scale of $\frac{1}{5000}$.
3. Copy of a drawing in ink, with hachures, contours, and section; scale of $\frac{1}{10000}$.
4. Construction of a plan illustrating levelling, with section; scale of $\frac{1}{5000}$.
5. Copy in ink of a regular survey with sections; scale of $\frac{1}{5000}$.

For the students of the second year.

1. Copy of a drawing with pencil hachures; scale of $\frac{1}{5000}$.
2. Copy of a drawing in ink with hachures, contours, and section; scale of $\frac{1}{10000}$.
3. Construction of a plan illustrating levelling, with section; scale of $\frac{1}{5000}$.
4. Copy of a drawing in ink with hachures and section, and reduction of the copy from a scale of $\frac{1}{10000}$ to $\frac{1}{20000}$ (for the infantry). Rapid field-sketch in pencil; scale of $\frac{1}{20000}$ (for the cavalry).
5. Finishing in ink the regular survey; scale of $\frac{1}{5000}$.
6. Finishing in pencil the road-sketch; scale of $\frac{1}{10000}$.

Third Part.—Surveys and Reconnaissances. Memoirs.

The topographical surveys are preceded by practice in the use of instruments, which is carried on in the school grounds.

In the execution of the surveys each student is required to go through all the operations of fixing the main points, filling in the details, and levelling, and to make all the observations and collect the information required for the completion of the plan and the memoir, in accordance with the instructions issued.

The regular survey is executed within a radius of about 1,000 metres round the school, and as far as possible is completed in three attendances of four hours each.

The road reconnaissance is executed within a radius of three or four kilometres from the school. The time allowed for it is four hours.

The plan and memoir relating to each survey are completed immediately after the termination of the work upon the ground.

II.—COURSE OF FORTIFICATION.

(Twenty-seven Lectures.)

First Part.—Field Fortification.

(*Fourteen Lectures.*)

Lecture 1.—General principles. Natural and artificial fortifications. Field and permanent fortification.

Construction of field works; technical terms, parapet, banquette, slopes, &c.

Lecture 2.—Principles governing the trace of field works; salient and re-entering angles, principles of flank defence, length of faces and flanks, equilibrium of deblai and remblai.

Lectures 3, 4, and 5.—Lines, enclosed works, redoubts, réduits, block-houses.

Lecture 6.—Defilade; various methods of practically defilading field works.

Lecture 7.—Internal arrangements; magazines, barbettes, embrasures, &c.

Lecture 8.—External defences.

Lecture 9.—Method of constructing a work on the ground; mode of defilading it; arrangement of working parties; time required for the execution of a work; means of accelerating the construction; rapidly executed entrenchments; Rogniat's lines.

Lecture 10.—Têtes-de-pont.

Lectures 11 and 12.—Mode of putting inhabited places in a state of defence, strengthening walls, hedges, houses, villages, &c.

Lecture 13.—Arrangements for the attack and defence of isolated works, continuous lines, houses, and villages.

Lecture 14.—Castrametation; *tentes d'abri*, tents, huts, camp for a battalion or squadron, camp ovens and kitchens, other accessories of a camp.

Second Part.

Permanent Fortification.

(*Five Lectures.*)

Lecture 15.—Historical review of permanent fortification to the time of Vauban.

Lecture 16.—Cormontaigne's system, modifications of Vauban's system introduced by him. Object and value of the interior works; cavaliers and retrenchments; communications with the exterior.

Lectures 18 and 19.—Exterior works within range of the fire of the place. Detached works out of range. Accessories of fortresses; citadels, entrenched camps, employment of water in defence, mines, military buildings, magazines. General principles relating to coast fortresses.

Third Part.

Attack and Defence of Places.

(*Eight Lectures.*)

Lectures 20 and 21.—General considerations regarding fortresses; their connexion with the defence of a country; detailed account of the fortifications of Paris; relative value of detached forts and of a continuous enceinte. Duties in connexion with preparations for sustaining a siege.

Lectures 22, 23, and 24.—Attack of a fortress; various stages of a siege up to the time of the assault. Defence of a fortress.

Lecture 25.—Attack and defence of interior works.

Lectures 26 and 27.—General summary; duration of a siege; defects in Vauban's and Cormontaigne's traces; improvements introduced in the modern system.

Objections brought against the bastion system; the polygonal system; discussion of a front with casemated caponnières; detached scarp walls; review of the modifications required in the attack of a work on the polygonal system. Duties of infantry and cavalry in the attack and defence of fortresses. Examples of some memorable sieges.

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WORK IN CONNEXION WITH THE COURSE OF FORTIFICATION.

(i.) *Hand-sketches not drawn to scale.*

1. Profile of a field work on horizontal ground to resist (*a*) musketry, (*b*) field artillery.
2. Trace of a large and small redan, a lunette, a *queue d'hironde*, and a horn-work.
3. A square bastioned fort.
4. Arrangement of working parties for the construction of the work represented in the 1st drawing. Profiling. Most usual methods of revetting slopes.
5. Form and dimensions of accessory defences.
6. Trace of a large tête-de-pont. A crown-work. Details of a flank on one of the long branches. Profiles of rapidly executed entrenchments.
7. Trace of the magistral line of a front on Vauban's first system.
8. Details of a crochet in the covered way and of a re-entering place of arms on Cormontaigne's system.
9. Details of the main postern and of a *pas de souris*.
10. Plan and profiles of a siege trench, a flying sap, and a full sap, representing the different stages of progress in these works.
11. Plan and profiles of a trench cavalier, showing the different stages of progress.
12. Details of a zig-zag at the point where a change of direction is made. Details of a double standing sap with traverse.
13. Details of the crowning of the covered way at the salient of a ravelin.
14. Details of a blinded descent into the ditch, and of the passage of a wet ditch on fascines.

(ii.) *Drawings to scale.*

Plate 1.—Plan and profiles (both perpendicular and oblique) of a field-work, composed of a salient and re-entering angle, from given conditions; with scales of planes of fire,

Plate 2.—(*a.*) Plan of a square redoubt with a barbette, entrance, and traverse; showing profiles.
(*b.*) Plan and profiles of a battery for three guns in a field-work, with direct and oblique embrasures.
(*c.*) Plan and sectious of a block-house, in full detail.

Plate 3.—Plan of a camp for a battalion or squadron, on a scale of $\frac{1}{1000}$, with plans and sections of a hut, a field oven, and a kitchen.

Plate 4.—Plan of a front on Cormontaigne's system.

Plate 5.—Plan of the siege works against a place constructed on Cormontaigne's system.

(iii.) *Memoirs.*

The students are required to write one or more memoirs on subjects connected with the course.

(iv.) *Work executed on the ground.*

1. Preparation of gabions and fascines for siege works.
2. Repairing the revetments and platforms of a battery
3. Tracing, profiling, and defilading a field work.
4. Construction of a portion of a field work.
5. Execution of a portion of a second parallel by flying sap, and the mode of advancing from a parallel by single sap.
6. Method of tracing a camp for a battalion of infantry; pitching the tents which determine the alignment of the streets.
7. Construction of camp ovens and kitchens.

III.—COURSE OF ARTILLERY.

(Twelve Lectures.)

Lecture 1.—Small arms; their history; rifled muskets; theory of rifling.

Lecture 2.—Breech-loading small arms; detailed description of the Chassepot rifle; conversion of muzzle-loaders to breech-loaders. Theory of the trajectory, accuracy of fire, deviation, derivation.

Lecture 3.—Description of swords, lances, cuirasses, pistols, &c., in the service.

Lecture 4.—Brief account of the manufacture of small-arms.

Lecture 5.—Ordnance; historical account of artillery; introduction of rifled guns; account of the existing system of land artillery; classification of guns in the service.

Lecture 6.—Projectiles.

Lecture 7.—Artillery *matériel*; carriages, limbers, waggons, &c. for field, mountain, siege, garrison, and coast artillery. Materiel required for a siege and pontoon train.

Lecture 8.—Powder, ammunition, and laboratory stores. Transport of various kinds of ammunition.

Lecture 9.—Theory of artillery, general principles, definition of technical terms, derivation, initial velocity, &c. Different kinds of fire, ricochet, vertical, plunging, enfilade, &c. Rules for laying guns. Effects produced by the different kinds of fire.

Lecture 10.—Existing organization of the artillery service, horse artillery, field batteries, garrison artillery, pontoon train, artificer companies, &c.; duties of the various branches of the service. Artillery establishments. Duties of the artillery in the attack and the defence of fortresses.

Lecture 11.—Employment and management of field artillery on service; organization of the service for a campaign. General principles regulating the employment of field guns in action; position for guns; duties of artillery in attacking and defending positions, and with advance or rear guards.

Lecture 12.—Military bridges; conditions which they should fulfil; selection of a point of passage. Organization of a pontoon train. Different methods of constructing a pontoon bridge. Boat, raft, cask, gabion, carriage, trestle, spar, flying, and trail bridges. Booms. Maintenance and destruction of bridges.

Practical exercises in artillery.

1. Service of field guns; one company of students at a time; 14 attendances of two hours each.
2. Service of siege guns; six attendances for each company.
3. Construction of fascines, gabions, and hurdles. Construction and repair of a battery.
4. Preparation of artillery ammunition.
5. Artillery and musketry practice; 16 exercises on an average.

Artillery drawings.

1. Drawing of a field gun.
2. „ „ a siege howitzer.
3. „ „ an improvised bridge.

APPENDIX D.

School of St. Cyr.

IV.—COURSE OF MILITARY ART AND HISTORY.

(*Thirty-two Lectures.*)

Lecture 1.—Introductory principles. Military organization of a state; constituent elements of a standing army, reserves, military establishments, &c. Military institutions, system of recruiting, discipline, rewards, military justice, administration, education.

Definitions of strategy and tactics.

Division of the course into (1) military history, and the consideration of military institutions at various eras, (2) military art and tactics at the present day.

First Part.

Military History.

Lecture 2.—Military institutions in ancient times, amongst the Greeks and Romans. Period of the middle ages, from the Crusades to the time of Charles VII.

Lecture 3.—Transition period, from the time of Charles VII. to that of Louis XIV. Creation of standing armies. Military system of the German empire and of Sweden at the time of the Thirty Years' War. Gustavus Adolphus.

Lectures 4 and 5.—Modern period. Period from the time of Louis XIV. to that of Frederic the Great. Military institutions and organization. Historical account of the different arms; infantry, cavalry and dragoons, artillery. Military operations; Condé, Turenne, campaigns of 1674 and 1675, the Maréchal de Saxe.

Lecture 6.—Period from the time of Frederic the Great to 1789. Improvements introduced by Frederic the Great. Account of the Prussian infantry, cavalry, and artillery under him. His military operations and orders of battle; battles of Rosbach and Leuthen.

Lecture 7.—Details connected with the French army from 1750 to 1789. Military institutions, organization, tactics of the three arms.

Lectures 8 and 9.—Period of the Revolution and the Consulate, from 1789 to 1804. Military institutions and general organization. Military establishments. Composition of the army. Tactics of the three arms. Combined operations and orders of battle. Military operations at the commencement of the wars of the Revolution, with illustrations from the campaigns of Dumouriez and Jourdan.

Lectures 10 and 11.—Account of parts of Napoleon's Italian campaigns. Campaign of 1796 and 1797; operations against the Austro-Sardinian army; operations round Mantua; Alvinzi's second expedition. Campaign of 1800; operations on both banks of the Po; battle of Marengo.

Lectures, 12, 13, and 14.—Period of the Empire, (*a*) from 1804 to 1808. Changes introduced in military organization; organization of the Grand Army; the camp of Boulogne and its results.

Account of portions of Napoleon's campaigns from 1805 to 1807. Campaign of 1805; operations round Ulm; operations in Moravia; battle of Austerlitz. Campaign of 1806; battles of Jena and Auerstadt. Campaign of 1807; battle of Friedland.

Lectures 15, 16, and 17.—Period of the Empire, (*b*) from 1808 to 1815. Organization of the army. Account of portions of Napoleon's campaigns in 1809 and 1814. Campaign of 1809; operations round Ratisbon; operations in the neighbourhood of Vienna; first passage of the Danube, battle of Essling; second passage of the Danube, battle of Wagram. Campaign of 1814; operations against the armies of Silesia and Bohemia; battle of La Rothière; action of Montmirail.

Lecture 18.—Period of the Restoration and of the Monarchy of July

from 1815 to 1848. Military establishments and organization of the army. Account of portions of the campaigns in Africa from 1833 to 1844.

Appendix to the first part of the course.

Review of military history from the time of the creation of standing armies in France.

Military institutions, recruiting, promotion, pensions and distinctions, military justice, military schools.

Organization and tactics of infantry, cavalry, and artillery, at various periods.

Combination of the three arms; organization of armies on active service; orders of battle.

Second Part.

MILITARY ART. SPECIAL CONSIDERATION OF THE VARIOUS ARMS.

Lectures 19, 20, and 21.—Infantry; its organization and action; formations and manœuvres of a single battalion and of battalions in combination; formations in line, column, and square; employment of skirmishers.

Lectures 22, 23, and 24.—Cavalry; different kinds of cavalry; its action; formations and manœuvres of a single squadron and of squadrons in combination; formations in line; employment of columns; movements, the charge; employment of light cavalry, as skirmishers, for outpost duty, for reconnaissances, on duties connected with marches, &c.

Lecture 25.—Field artillery; its employment in action; manœuvres of a field battery; divisional and reserve batteries; employment of reserves of artillery.

Lecture 26.—The three arms in combination. Organization of an army on active service; its component parts; composition of a division of infantry, a division of cavalry, a corps d'armée, and an army.

Lectures 27, 28, and 29.—Marches, (1) of concentration, (2) of manœuvre. Orders of battle. Arrangements connected with troops during a campaign; cantonments, camps, and bivouacs, outpost duty.

Lectures 30, 31, and 32.—Reconnaissances of various kinds; details connected with the reconnaissance and the attack and defence of villages, positions, defiles, &c. Detached operations; partisan warfare, foraging parties, convoys and escorts, ambuscades and surprises.

V.—COURSE OF MILITARY LEGISLATION AND ADMINISTRATION.

(Twenty-two Lectures.)

Lecture 1.—Introductory principles of general legislation. International law. General account of the civil law of France, constitutional law, departments of the government, judicial powers.

Composition of the forces of the country; their relations to the civil government; state of peace, state of war, state of siege. Powers of the Minister of War.

First Part.

LEGISLATION.

Lectures 2, 3, and 4.—Organization of the land forces. Various component parts of the army, different branches of the service. Military establishments; the Ministry of War, Hotel des Invalides, military schools, artillery, engineer, administrative, and other establishments. Distribution into military districts.

Recruiting of the army by forced levies and voluntary engagements;

Appendix D. School of St. Cyr.

laws relating to the conscription, organization of the reserve, exemptions and substitutes; voluntary engagements; discharges, half-pay.

Lecture 5.—Laws relating to promotion.

Lecture 6.—Status of officers; loss of rank, suspension from employment. Laws relating to pensions for long service or wounds, pensions to widows, and assistance to orphans.

Lectures 7 and 8.—Military justice; constitution, powers, and course of procedure of courts martial; the provost service; crimes and penalties.

Lecture 9.—Honorary distinctions; the Legion of Honour, medals. Civil rights and status of military men.

Second Part.

Administration.

Lectures 10 and 11.—Division of administrative duties into duties of control and executive duties. Financial regulations, pay of soldiers, and allowances in aid of pay.

Lectures 12, 13, and 14.—Regulations connected with the supply of rations, fuel and light, clothing and camp equipment; the remount establishments and purchase of horses for the army; the barrack department and regulations relating to billets; duties connected with the march of troops and transport of baggage; the hospital service.

Lecture 15.—Regimental interior economy; boards of administration, their composition and duties.

Lectures 16, 17, 18, and 19.—Interior economy of companies and squadrons; duties of the captains in regard to pay, rations, clothing, arms, stores, and barrack furniture. Mode of keeping soldiers' small books, and the company books, returns and accounts. Messing and washing of the troops.

Lectures 20, 21, 22.—Paymasters' duties relating to pay, allowances, and books. Duties connected with regimental clothing and equipment; demand, purchase, issue, storage, and repair of articles.

Administrative control exercised over regimental interior economy; control vested in the officers of the intendance, inspections by general officers.

Financial and administrative duties connected with detachments in time of peace and on active service.

VI.—COURSE OF MILITARY HYGIENE.

Lecture 1.—Sanitary science in general, and special features of military sanitary science. Mortality in armies as compared with that among civil population. Special causes of mortality among troops; age, mode of life, and habits of soldiers.

Effects of the surrounding air, temperature, dampness, soil, climate, &c. upon health.

Lecture 2.—Garrison life; dwelling houses, want of air, infection and contagion; barrack buildings, prisons, cells, kitchens, latrines, regimental hospitals, guardrooms; amount of cubic space required, ventilation and heating.

Camp life; camps, bivouacs, huts, tents, ambulances. Causes of the unhealthiness of camps; fields of battle, kitchens, latrines, slaughtering places.

Lecture 3.—Clothing, equipment, and arms. Cleanliness, bathing; gymnastics, riding, swimming; their effects on health and on muscular development.

Lecture 4.—Substances of food; vegetable and animal food, their relative digestibility, cooking. Physical qualities of different kinds of

food; soup; flour and its adulterations, bread, vegetables, fruit, spices. Rations in peace and on active service; necessity of varying soldiers' food according to circumstances. Beverages; water, character of drinkable water, filtration and purification of water; wine, beer, alcohol, and their adulterations; intoxication; coffee.

Lecture 5.—Review of the chief epidemics which are fatal to armies, the means of preventing, mitigating, and getting rid of them, with instances. Effects of bad air, clothing, food, and adulterations; infection and contagion; disinfection of places and articles; preservation of food. Sleep, moral habits.

Appendix on the remedies to be adopted in cases of drowning, poisoning, and in the case of the most ordinary illnesses.

VII.—VOLUNTARY COURSE OF MATHEMATICS FOR CANDIDATES FOR THE STAFF SCHOOL.

Arithmetic and Algebra.—Proportion, arithmetical and geometrical progression, theory of logarithms and use of logarithm tables, algebraical multiplication and division, simple equations with one or more unknown quantities, quadratic equations, theory of indices and roots, negative and fractional exponents, exponential and logarithmic equations.

Geometry.—Plane and curved surfaces, calculation of the volumes and surfaces of polyhedra, cones, cylinders, and spheres; solid angles and spherical triangles.

Plane Trigonometry. — Trigonometrical functions of angles, their variations as the arc varies, their relations with each other, calculation of the functions of angles of 30°, 45°, 60°, and 90°; formulæ for the functions of the sum and difference of two angles; construction and use of logarithmic tables; solution of triangles.

Spherical Trigonometry.—Fundamental formula; calculation of the other formulæ for the relations (1) between two angles and the two opposite sides; (2) between two sides, the included angle and an opposite angle; (3) between one side and the three angles; (4) between the three sides and two angles; (5) between two sides and the three angles.

APPENDIX E.

FRENCH STAFF SCHOOL.

EMPLOYMENT of TIME during the MONTH of APRIL 1868. 2ND (JUNIOR) DIVISION.

TABLE I.

Morning Roll call at 6.	6		9		10 12.45		1 3.15		3.30 5
Days of Week.	Morning Work.				Drawing and Interrogations.		Lectures and Study on the Lectures.		Evening Work.
Tuesday, Wednesday, Thursday, Saturday.	From 6 to 7	From 7 to 8	From 8 to 9						
Monday and Friday.	From 6 to 6.30	From 6.30 to 7.30	From 7.30 to 9						
Monday - - -	Study of the Drill-book.	Lecture on Cavalry Drill. (*Théorie de cavalerie.*)	Riding School.	Interval for Breakfast.	Topography or Geography.	Free Interval.	Astronomy. (*Cosmographie.*)	Free Interval.	Landscape Drawing.
Tuesday - - -	Study in preparation for German Lecture.	Fencing.	German Lecture.		Applied Geometry.		Artillery, Geometry, or Military Legislation.		Cavalry Drill, Mounted. (*Travail militaire.*)
Wednesday - - -	Lecture on Veterinary Science.	Civilian Riding. (*Travail de carrière.*)			Topography or Geography.		Military Art or Topography.		Landscape Drawing.
Thursday - - -	Study in preparation for German Lecture.	Fencing.	German Lecture.		Fortification or applied Geometry.		Legislation, Fortification, or Artillery.		Riding School.
Friday - - -	Study of the Drill-book.	Lecture on Cavalry Drill.	Cavalry Drill, Mounted.		Topography.		Topography or Artillery.		Landscape Drawing.
Saturday - - -	Study of German or Drill-book.	Fencing.	German Lecture.		Applied Geometry.		Geometry.		Riding School.

FRENCH STAFF SCHOOL.

EMPLOYMENT of TIME during the MONTH of APRIL 1868. 1ST (SENIOR) DIVISION.

TABLE II.

Morning Roll call at 6.	6		9		10 12,45		1 3.15		3.30 5
Days of Week.	Morning Work.								
Monday, Wednesday, Thursday, Friday.	From 6 to 7	From 7 to 8	From 8 to 9		Drawing and Interrogations.		Lectures and Study on the Lectures.		Evening Work.
Tuesday and Saturday -	From 6 to 6.30	From 6.30 to 7.30	From 7.30 to 9						
Monday - - -	Study in preparation for German Lecture.	Fencing.	German Lecture.		Topography.		Geodesy.		Riding School.
Tuesday - - -	Study of the Drill-book.	Lecture on the Drill-book.	Riding School.		Fortification.		Fortification.		Landscape Drawing.
Wednesday - - -	Study in preparation for German Lecture.	Fencing.	German Lecture.		Topography.		Military and Physical Geography.		Cavalry Drill, Mounted. (*Travail militaire.*)
Thursday - - -	Lecture on Veterinary Science.	Civilian Riding. (*Travail de carrière.*)			Fortification.		Military Legislation.		Landscape Drawing.
Friday - - -	Study of German or Drill-book.	Fencing.	German Lecture.		Topography.		Military Art.		Riding School.
Saturday - - -	Study of the Drill-book.	Lecture on the Drill-book.	Cavalry Drill, Mounted.		Fortification.		Artillery.		Landscape Drawing.

Interval for Breakfast. | Free Interval. | Free Interval.

APPENDIX F.

FRENCH STAFF SCHOOL.

PROGRAMMES OF THE COURSES OF INSTRUCTION.

I.—COURSE OF APPLIED GEOMETRY.

FIRST YEAR ONLY.

Shadows.

Determination of the lines of separation of light and shade on the surface of bodies, shadows thrown by bodies, penumbra.

Investigation of the real and apparent effects produced by light; reflection, brilliant points, irradiation, contrast.

General principles of shading.

Perspective.

Preliminary considerations. Vanishing points. Solution of the principal problems. Perpsective of an object represented by a figured drawing. Trace of shadows. Reflection of objects in water and mirrors.

Perspective views; general principles.

General account of photography, and the processes ordinarily employed. Manipulations. Reproduction of plans and maps.

Dialling.

Meridian, latitude. Tracing of sundials on plane surfaces at different degrees of inclination. Curves of declination; meridian of mean time.

Architecture.

Description of the different parts of a building. Foundations, walls, wood and plaster work, doors, windows, isolated supports, columns, orders of architecture, simple and composite roofs, floors, ceilings, staircases. General conditions of accommodation, convenience, healthiness and durability.

Machinery.

Modes of measuring work; motive powers of man and animals, of the wind, of water, of steam, of electricity. Instruments for measuring the power of machines.

Different modes of transforming motive power; shafts, connecting rods, eccentrics, driving wheels, &c. Description of machines moved by water and steam. Railways, locomotives. Steamboats. Transport of troops.

Electric and semaphore telegraphy.

Drawings in connexion with the course.

Geometrical determination of the shadows on a simple machine.
Shading of the subject of the preceding plate.
Perspective of an interior by the aid of a figured drawing.
Perspective of a building.
Trace of various sundials.
Plan of timberwork.
Two perspective views of country.
Drawing of machinery; determination of the shadows.

II.—COURSE OF COSMOGRAPHY, PHYSICAL GEOGRAPHY, AND STATISTICS.

FIRST YEAR.

Cosmography.

Diurnal motion. Appearance of the heavens. Uniform motion of the stars. Declination. Right ascension. Constellations; rotation of the earth.

The sun. Apparent motion. Obliquity of the ecliptic. Celestial latitude and longitude. The seasons. Precession of the equinoxes and mutations of the earth's axis. Motion in an ellipse. Parallax, distance, volume, rotation. Measure of time. Motion of the earth round the sun. Inequality of days and nights. Terrestrial latitude and longitude. Meridians, parallels of latitude. Projection of maps.

The moon. Circular and elliptical motion. Parallax. Distance, volume, rotation. Phases. Eclipses. Calendars.

Planets, satellites, comets, and fixed stars. Direct and retrograde motion, stations. Kepler's laws. Rate of passage and aberration of light. Annual parallax of the stars. Proper motion of the stars. Their orbits.

Attraction. General laws deduced from Kepler's laws. Perturbations, mass and form of the planets, irregularities of the moon. Tides.

Physical Geography.

Explanation of the method of natural divisions. General physical description of the ancient hemisphere, the modern hemisphere, and the ocean.

SECOND YEAR.

Military Geography.

Influence of geographical conditions on military operations. Object of military geography. Capital towns, conditions of security. Frontiers, their classification. Natural obstacles and passes.

Study of the frontiers of France.

Physical and military geography of Algeria.

Physical Geography. Meteorology.

Thermometry.—Distribution of temperature in the atmosphere and on the surface of the globe. Isothermal curves; poles of extreme cold.

Hygrometry.—Diurnal and annual variations of atmospheric hygrometry. Condensation of vapour. Dew, frost, hoar-frost, fogs, clouds, rain.

Winds.—General cause of winds. Anemometers. Ordinary, periodical, variable, and accidental winds.

Barometry.—Diurnal and annual variations of the barometric pressure; accidental variations.

Aqueous phenomena.—Distribution of rain over the globe. Perpetual snow and glaciers. Subterranean springs. Mineral and hot springs. Method of regulating watercourses; lakes and marshes.

The sea; its depth, colour, saline and phosphoric properties, temperature. Icebergs. Waves. Tides.

Theory of currents; general and particular currents; their influence on climates.

Classification of climates.

Atmospheric electricity.—Diurnal and annual variations. Storms. Thunder and lightning. Water-spouts. Hail.

Terrestrial magnetism.—Diurnal and annual variations of the declina-

tion and inclination of the needle. Ampère's theory of terrestrial magnetism. The Aurora borealis. Shooting stars. Aerolites.

Atmospheric optics.—Twilight, mirage, rainbows, haloes, &c.

Geology.

Primitive fluid condition of the earth. Geological phenomena of the present era, their comparison with ancient phenomena. Results of the central heat. Evidences of ancient disturbances and rearrangements. Igneous rocks. Metamorphism.

Composition of the crust of the earth. Sedimentary rocks, rocks of fusion. Constant order in the succession of sedimentary deposits. Stratification, and its connexion with palæontology and mineralogy.

The geological map of France.

Political Economy and Statistics.

General remarks on the calculation of probabilities. Theory of averages Inquiry into causes. Applications of the principles to subsistence and population.

Statistics of human life. Tables of mortality and population. Average length of life. Probabilities of life. Laws of mortality among an increasing population; coefficients of increase of population.

Social arithmetic. Formula for compound interest. Discount. Annuities. Financial societies founded on the probabilities of human life. Life annuities. Tontines. Life assurances.

General principles of political economy. Labour and capital. Exchange, freedom of exchange. Value and price; laws of supply and demand; restrictions upon prices. Money, its properties, the part it plays. Alteration in the value of money. Paper money. Relations established by law between gold and silver currency. Commercial equilibrium. Private credit; promissory notes, bills of exchange, bank notes. Laws relating to usury. Public credit. Loans and mortgages. Taxes; fixed, proportional, and progressive taxation.

EXERCISES CONNECTED WITH THE COURSE.

First Year.

Projections of maps.

Second Year.

Memoir on some question of geography.

Cap. I. Physical geography and considerations connected with climate.
Cap. II. Statistics.
Cap. III. Military considerations.

III.—COURSE OF TOPOGRAPHY.

FIRST YEAR.

Introductory principles.

Spherical trigonometry. Newton's binomial theorem for integral and fractional, positive and negative indices. Expansion of sines and cosines in ascending powers of the arc.

Topography.

Objects and definition of topography. Modifications of the method of projection employed in descriptive geometry. Representation of plane surfaces and of the inequalities of ground; different modes of representing the configurations of ground on a plan. Problems arising out of the

survey of a tract of ground. Description of the instruments used for triangulation and levelling. Instructions regarding regular surveys and field sketches. Method of keeping levelling registers. Reduction of drawings. Description of the pantograph.

SECOND YEAR.

Principles of optics.

Reflection and refraction of rays of light; construction of lenses; description of optical instruments. Principles of analytical geometry. Equations to the straight line and to curves of the second degree. Equations of the tangent and normal to the ellipse.

Geodesy.

Combination of geodetical operations. Different corrections required in the measurement of a base. Description of repeating instruments; Borda's circle; the theodolite and the reflecting circle. Formulæ for the reduction of an angle to the centre of the station near which it is measured; for the reduction of a measured angle to the horizontal angle; for the reduction of a measured vertical angle to a point vertically above or below the centre of the instrument.

Calculation of provisional and definitive triangles. Investigation of the coefficient of refraction and of the formulæ for differences of level, by means of one or more zenith distances. Formulæ employed for determining the latitudes and longitudes of stations and the azimuths of the sides of the triangles. Calculation of the co-ordinates of a point in Cassini's projection of the surface of the sphere, and in Flamsteed's projection as modified, and in the map executed by the *Depôt de la Guerre*. Barometric levelling and investigation of the formula employed.

DRAWINGS AND PRACTICAL EXERCISES ON THE GROUND.

First year.

A. Practice in topographical drawing :—

(1.) Drawing from a copy, scale $\frac{1}{10000}$.
(2.) Drawing from a model, scale $\frac{1}{15000}$.
(3.) Drawing from a copy, scale $\frac{1}{20000}$.

B. Surveying :—

(1.) Preliminary survey on a scale of $\frac{1}{2500}$.
(2.) Regular survey on a scale of $\frac{1}{10000}$.

N.B. The main points are fixed by the plane-table, and the details are filled in with the compass.

(3.) Rapid field sketch on a scale of $\frac{1}{10000}$.
(4.) Two rapid road reconnaissances on a scale of $\frac{1}{10000}$, each consisting of a topographical sketch in pencil, and a tabular descriptive report.

The regular survey is accompanied by a memoir, containing topographical, statistical, and historical information; this includes the discussion of some military question in connexion with the district surveyed, which is looked over by the professor of military art.

Second year.

A. Practice in topographical drawing :—

(1.) Drawing from a model, scale $\frac{1}{10000}$.
(2.) Reduction of surveys to a scale of $\frac{1}{20000}$.

B. Outdoor work :—

(1.) Surveys and road reconnaissances as in the first year, omitting the preliminary survey (the rapid field sketch is on a scale of $\frac{1}{20000}$).

APPENDIX F.

French Staff School.

(2.) Measurement of a base.
(3.) Geodetical observations.
(4.) Road reports and reconnaissances.

N.B. The observations taken with the repeating circle and the theodolite are intended to ascertain the angles of the triangles, the zenith distances, and the elements necessary for the calculation of the geographical co-ordinates of certain stations and of several points deduced from them.

The students calculate the triangles which connect these points, their latitudes, longitudes, and altitudes; and subsequently construct a plan.

IV.—COURSE OF ARTILLERY.

FIRST YEAR.

Guns and projectiles.—Historical account. Systems adopted. Principles which determine the actual form and dimensions. Manufacture, proof, sighting, and storage.

Limbers and carriages. — General principles. *Matériel* of field, mountain, siege, garrison, and coast artillery. Harness and draught. Practicability of roads for artillery.

Artillery fire.—Theory of fire and sights. Causes of irregularity in fire; means of remedying it; rifled arms. Theoretical motion of a projectile *in vacuo*. Resistance of the air. Main differences between the path of a projectile in the air and *in vacuo*. Different kinds of fire. Elevation, charge, laying, and service of guns in use.

Small-arms.—Firearms; determination of the principles on which their fire depends. Side-arms.

Siege, garrison, and field batteries.—Epaulements, terre-plein, embrasures, revetments, platforms, magazines.

Government artillery establishments.

Organization.—Successive changes in the organization of artillery; its existing organization. Manœuvres of a field battery.

SECOND YEAR.

Military bridges. — Reconnaissance of rivers preparatory to the establishment of bridges. Means employed for the passage of rivers. Bridges on floating and fixed supports.

Pontoon-boat and principal articles of equipment of the French pontoon train. Different modes of constructing bridges with boats and rafts. Trestle, pile, and rope bridges.

Passage of rivers by fords, swimming, and on the ice. Passage of canals and small streams. Trail and flying bridges. Maintenance, destruction, and repair of bridges.

Organization of pontoon trains. French pontoon equipment. Its transport by land and water.

Armament and defence of fortresses.—Principles successively proposed. Principles which should be adopted. Choice of guns. Organization of the artillery. Its duties at different stages of the defence.

Attack of fortresses.—Formation of a siege train. Number and kind of guns to be employed. Supply of ammunition and stores. Limbers, carriages, and horses. Composition of the troops employed. Transport of the train. Establishment of parks and depôts. Construction of the first batteries. Duties of the artillery at different stages of the siege. Breaching batteries and breaching fire.

Field artillery.—Successive improvements in field artillery from the time of Gustavus Adolphus to the present day. Proportion of artillery

to the other arms. Principles determining the composition and equipment of field artillery. Organization of the *matériel* and *personnel* for an army of a given strength. Employment of artillery in action. Duties connected with parks and convoys of artillery.

Coast defence.—General considerations. Situation and arrangement of batteries. Selection of guns to be employed. Fire against ships. Staff. Embarkation and disembarkation of matériel.

Evolutions of field batteries.

Drawings, &c. connected with the Course.

Second year.

Plates referring to the construction of boat, raft, trestle, and flying bridges.

Plate showing the details of a breaching battery.

Drawing of a gun or artillery carriage. Memoir to accompany this drawing.

V.—COURSE OF FORTIFICATION.

First Year.

Military buildings.—Barracks for infantry and cavalry; ordinary, vaulted, and defensive barracks. Cooking houses, bakeries, ovens, powder magazines, &c.

Permanent fortification.—Body of the place; conditions which should be fulfilled by it. Different profiles and scarp revetments. Front on the modern system. Exterior works; the conditions to which they should conform. Object of citadels and detached works. Communications, and the most usual forms of drawbridges. Fronts on a straight line. Entrenched camps. Employment of water in the defence of fortresses; inundations and *chasses d'eau*. Drawbridges.

Foreign fortifications.

Second Year.

Military communications.—Sections and dimensions to be adopted for roads. Principles to be observed in laying them out. Their construction, repair, and destruction. Military conditions required in laying out roads, railways, and canals in the interior and near the frontiers. Sections to be adopted for railways and canals. Sluices and locks. Supply of water for canals. Data for calculating the rapidity and expense of different kinds of transport.

Defilade.—Fundamental principles of defilade as applied to detached field works and to lines.

Field fortification.—Importance of the choice of position for works. Calculation of *deblai* and *remblai*, and construction of works. Barbettes, traverses. Details regarding revetments and accessory defences. Construction of block-houses, caponnières, and stockades. Method of putting houses and villages into a state of defence. *Têtes-de-pont.*

Frontier fortification.—Different objects of fortified places according to their position and size. Principles adopted in regard to the sites chosen for fortified places in France; new principles laid down by certain writers.

Attack and defence of fortresses.—Reconnaissance of the place. Selection of the front of attack. Preliminary preparations. Strength of the besieging army. Siege works required. Position for batteries. Profiles and principles which determine the trace of the approaches and parallels. Description of the operations of a siege. Measures for putting a fortress in a state of defence; calculation of the strength of garrison required. General principles of the defence.

Underground fortification.—Construction of shafts and galleries for mines; charge for common mines. Construction of fougasses. Systems of mines. Demolition of bridges by powder.

Drawings and Applications.

Survey of a military building, accompanied by a memoir.
Plate showing the mode of defilading a field-work.
Project for a field-work with an accompanying memoir.
Tracing and profiling a work on the ground, with descriptive account.
Visit to the fortifications of Paris, accompanied by a memoir.
Plan of a fortress.
Reconnaissance of the approaches to a work of fortification.
Memoir relating to some actual fortress:—

Cap. I. Objects and importance of the place.
Cap. II. Description of the fortifications.
Cap. III. Calculation of the strength of garrison, and of the amount of stores and supplies required for its defence.

VI.—COURSE OF MILITARY LEGISLATION AND ADMINISTRATION.

Both Years.

First Part.

General Legislation.

Connexion between military legislation and the science of universal law. Divisions of the latter science. Principles of natural law. Divisions of positive law.

Civil and constitutional law. Constitution of the 14th of January 1852. Senatus-consultum of the 17th of July 1856, fixing the time for the majority of the heir to the throne, and the constitution of the Privy Council and the Council of Regency.

Administrative law. Powers of the Emperor, the Ministers, and the Council of State. General and individual administrative authorities. Staff and composition of the administrative departments, administrative councils.

Crown lands. Personal property. Ordinary revenues of the state, of the departments, and of the corporations.

Review of the chief public departments connected with the internal administration of the country. Ministry of religious worship; of justice; of public education; of agriculture, commerce, and public works; of finance; of the interior; of marine.

Civil law. Main divisions of the civil code. Registration of civil condition. Rights of family and property. Succession. Wills. Commercial law. Criminal law and procedure. The penal code. Application of civil law to military persons.

International law in time of peace. Ministry of foreign affairs. Representation of the country abroad. Diplomatic and consular agents. Commercial treaties. Securities afforded to literary property. Postal conventions. Extradition treaties. International relations in time of peace. Principles of freedom of navigation. Regulations observed at sea. Right of search. Suppression of the slave trade.

International law in time of war. Measures permitted and forbidden. Neutral territory. Safeguards and passes. Flags of truce. Suspension of arms. Armistices. Captures.

Maritime law in time of war. Laws relating to privateering, neutrality, and prizes. Paper blockades. Continental blockade under Napoleon the First. Excesses committed on both sides. Principles adopted at the Congress of Paris in 1856.

SECOND PART.

MILITARY LEGISLATION.

Objects and composition of national forces. Military institutions. Authority of the higher ranks. Gradation of ranks. Passive obedience. Organization. Discipline. Administration. Application of the above principles in the French army. Composition of the army.

Strength of armies in general. Variations of the strength in France. System of recruiting and pay. Temporary and permanent reductions in the strength of the army.

Discipline and the means employed to maintain it. Military rewards. Promotion. Honorary distinctions and decorations. Pensions and pensioners. Repression of crime. Military justice. Suspension and reduction of non-commissioned officers. System of transporting soldiers to penal companies. Suspension of officers from employment. Classification of minor offences, crimes, and punishments. Constitution of military tribunals; their powers and method of procedure. Execution of sentences. Penal establishments connected with the army.

Legal state of military persons. Their special duties and privileges. Law of the 19th of May 1834 regarding officers. Application of the civil law to soldiers. Powers of notaries and justices of the peace in regard to them.

Review of the internal constitution of the army. Relative precedence of corps and different branches of the service.

Relations in which the army stands to the other branches of the national forces, to civilians, to the national guard, and to the navy. Regulations in time of peace. Relations between the civil and military authorities. Precedence. Employment of troops in aid of the civil power. Duties of civilians and military commanders.

State of war. Law of 1791. Decree of 24th December 1811. State of siege. Law of 1849. Constitution of 1852. Powers and functions of the various authorities.

THIRD PART.

MILITARY ADMINISTRATION.

Objects of military administration as an important branch of the administration of the state. Powers of the Emperor and the Minister of War. Powers delegated by the latter in regard to executive and administrative duties. Funds and means placed at his disposal. The war budget. Purchase and sale of stores, &c. Contracts. Administration of military lands. Zones of defence.

Military finance. Pay of the army. The administrative services. Account of the general regulations under which they act. Financial and store accounts. Mode of meeting the expenses of war. Control and audit of accounts.

Detailed account of the various administrative departments of the army in time of peace and in time of war. Duties connected with supply, clothing and field equipment, barracks.

Movement of troops. Duties connected with marches and convoys. Transport of *matériel* by land and water.

The remount department; provision of horses and bât animals.

The hospital service.

Duties connected with pay, in regard both to regimental and departmental officers.

Regimental interior economy in all branches of the service.

Administration of Armies on Service.

Preparations for war. Administrative organization of an army. Passage of the frontier. Provision of supplies. Transport of troops and

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convoys. Organization of a line of posts and of secondary bases of operations.

Administrative duties of the active staff of *corps d'armée* and divisions. Marches. Engagements. Evacuation of territory. General account of the hospital department.

Administration of conquered countries. Enforced contributions and requisitions.

Return to the national territory. Liquidation of the expenses of the war.

Applications of the Course.

Visit to a military bakery, and account of the process of making bread.

Visit to the central clothing establishment in Paris, and to the Godillot manufactory.

Visit to the military hospital at Vincennes, to a cavalry barrack, to a forage store, to the practical school of baking for field purposes, and a memoir upon the hospital service.

VII.—COURSE OF MILITARY ART.

First Year.

General principles. Military art. Military systems of various states. Standing armies; their organization. Reserves. Recruiting and remount establishments. Discipline. Administration. Instruction. Military establishments. Military system of the French empire, of Prussia, Austria, and Russia.

Infantry; its organization and characteristics; formations and manœuvres. Cavalry. Artillery. Employment of the three arms in combination, and organization of an army on active service. Its concentration, supplies, and train. Cantonments.

Minor operations. Reconnaissances. Daily reconnaissances. Reconnaissances in force. Special reconnaissances. Reconnaissances of roads and other communications, defiles, streams, military positions, inhabited places, and woods. Statistics connected with reconnaissances.

Applications of the Course.

Memoirs on various questions of military art, treated geographically.

Memoirs in connexion with the topographical surveys, comprising a question of military art referring to the district surveyed.

Method of tracing a camp on the ground.

Military reconnaissances on the ground.

Second Year.

Various parts of the art of war. Introduction to strategy. Introduction to high tactics. Consideration of frontiers as theatres of military operations. Influence of ground on operations. Special consideration of rivers and watercourses. Concentration of an army on active service by means of marches of concentration.

Strategy. Theatre of operations. Strategical points. Strategical lines; bases of operation and lines of defence; lines of operation and of communication. Double and numerous lines of operation. Plans of campaign. Strategical marches. Retreats. Combination of strategical operations in an offensive or defensive campaign.

High tactics. Consideration of military positions. Orders of battle, defensive and offensive. Selection of points of attack. Partial attacks on various points; combined attacks. Tactical marches. Offensive and defensive battles.

Organization and duties of the staff. Historical account of the staff of different armies. Various duties of staff officers. Staff of military districts. Staff of armies on active service. Duties of aides-de-camp

to general officers. Topographical department. Trigonometrical survey of France. Staff of foreign armies.

Applications of the Course.

Historical *précis* of a campaign or of a period of a campaign.

Discussion on the ground during the surveys of some military question and of historical events.

Correspondence connected with the duties of staff officers.

Military reconnaissances on foot and mounted.

VIII.—THEORY OF DRILL.

First Year.

Cavalry regulations up to regimental movements. Regulations for the interior economy of cavalry.

Second Year.

Regimental movements; cavalry.

Brigade and division movements; infantry and cavalry.

Special instruction is given to the students from the Polytechnic on the subject of battalion movements, with which the students who come from St. Cyr and the army have sufficient previous acquaintance.

Regulations regarding duties on active service.

IX.—RIDING.

Lessons in civilian riding during both years.

X.—PRACTICAL MILITARY INSTRUCTION.

First Year.

Cavalry recruit drill (*école de cavalier*), mounted.

Cavalry troop drill (*école du peloton*), mounted.

Sword exercise.

Method of saddling and bridling.

Instruction in giving words of command (*école d'intonation*).

Second Year.

Squadron drill by means of skeleton squadrons.

Regimental movements, illustrated by the field days of the regiments in the garrison of Paris.

XI.—COURSE OF VETERINARY SCIENCE.

Both Years.

The interior of the horse.—General principles of the organic structure. Description of the organs and their functions. Comparative anatomy of man and of the horse.

The exterior of the horse.—Consideration of the different parts of the body. Proportions. Points. Paces. Age. The coat.

Sanitary considerations.—Influence of different states of atmosphere and of the seasons on the health of the horse. Stables. Feeding. Horsekeeping and stable management. Clipping. Shoeing. Exercise and work.

Breeding. Studs. Remount establishments.

Diseases and injuries.

Examination of the horse for purposes of sale; blemishes, vice, warranty.

Riding.—Brief historical account of the subject. Position of the rider on horseback. Natural and artificial aids. Punishment. Definition of

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terms used in riding. Consideration of horse appointments and the mode of fitting them; historical account.

Horse-breaking. The Balassa method.

Management of a detachment of remounts.

Racing.

XII.—GERMAN LANGUAGE.

The course in German extends over both years of study, with the exception of the time employed in the surveys and in the general examinations.

XIII.—DRAWING.

The students have special instruction in landscape drawing. Practice in drawing from nature is afforded when the weather permits.

They are required to execute general landscape views from nature of the ground which they survey.

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RECENT CHANGES IN REGARD TO THE FRENCH STAFF SCHOOL.

Since the account in the text was written an important change has been introduced in regard to the organization of the French Staff Corps, and, in connexion with this change, modifications have been made in the mode of admission to the Staff School.

By the system which has been hitherto in force, and which is explained in the account of the Staff School, the officers of the French staff formed a special corps by themselves, completely distinct from the regimental officers of the army; the Staff Corps was recruited entirely from the young officers who passed through the Staff School on first entering the service, and the number of candidates admitted to the school was limited to that actually required from time to time to fill up the vacancies in the fixed establishment of the corps.

It has been found that this system is not adapted to furnish a sufficient supply of staff officers to meet the exigencies of war; the Staff Corps is not capable of sudden expansion on the outbreak of hostilities, and no reserve exists to meet the casualties which would occur in a campaign of any duration. The object of the recent changes is to give such an extension to the Staff Corps as will provide a reserve of trained officers, who may be drafted in to the staff in time of war, without incurring the expense of maintaining the cadre of the corps itself at a greater strength than is necessary to meet the ordinary requirements of peace.

The new arrangement, which was announced by an Imperial Decree of the 19th July 1869, is in fact a combination of the former French system of a special Staff Corps with our own system of employing regimental officers on the staff. The number of candidates admitted each year to the Staff School will in future be considerably in excess of that required to fill the vacancies likely to occur in the Staff Corps, the establishment of which will remain as at present. At the end of the two years' course of instruction there will be a competitive examination for admission to the Staff Corps; the candidates who stand highest on the list, to the number of those for whom there are vacancies, will be posted to the fixed establishments of the corps, and will, as at present, continue to be permanently members of it. The remainder, provided they attain the required standard of qualification, will form a reserve of trained officers

from which the staff may be recruited in cases of emergency. They will be sent to do duty for two years with one of the arms of the service to which they do not belong, and will then join their regiments, in which they will continue to serve, with the title of "auxiliaries," or "attached to the staff" (*adjoints d'état-major*). In order to keep up the knowledge acquired by them at the Staff School, the same exercises in topographical drawing, military reports, and reconnaissance will be required from these officers as from members of the Staff Corps. In time of war they will be temporarily withdrawn from their regiments to fill appointments on the staff, and will, while so employed, receive the pay and allowances attached to such appointments. Exchanges will also at any time be permitted between these officers and those on the permanent establishment of the Staff Corps. The general tendency of the changes, it will be thus seen, is to make the staff less of an exclusive and distinct service than it has hitherto been in France.

In addition to providing an adequate reserve of officers trained in staff duties to meet the demands of a state of war, it is expected that secondary advantages will result from the new system both to the army and to the Staff School—to the former by the number of highly instructed officers who will be gradually diffused throughout the regimental ranks of the service; to the latter by supplying the stimulus of competition among the students during the course of instruction, which was wanting while every-one admitted to the school could reckon on the certainty of appointment to the Staff Corps, provided he attained a certain standard of qualification.*

Together with the increase in the number of students at the Staff School, a change has been made in the mode of admission to the establishment. Under the system which prevailed last year, a small number of vacancies—not exceeding three annually—were reserved for students from the Polytechnic; the remainder were thrown open to competition among the cadets who stood highest on the list at the final examination at St. Cyr, and officers of the rank of sub-lieutenant who had already entered the service. This general competition is now abolished; those of the St. Cyr cadets who wish to enter the Staff School will be admitted, to the number for whom there are vacancies, in the order of merit determined by the final examination at St. Cyr, without undergoing any further competitive test, as was in former years the case with them, and as has always been the case with the students from the Polytechnic. At the same time a certain number of vacancies in the school, to be fixed each year by the Minister of War, will be reserved for sub-lieutenants already in the army, for which these officers will compete amongst themselves, the subjects of examination being the same as those which have hitherto been in force. The general competition, however, will in future take place at the close, instead of at the commencement of the course of instruction at the Staff School, and its object will be, not admission to the school, but appointment to the Staff Corps.

A full account of the recent changes in the organization of the Staff Corps and the Staff School, and an explanation of the motives which led to their adoption, are given in the following Report from the Minister of War, and the Imperial Decree annexed to it.

Rapport à l'Empereur.

SIRE, Paris, le 19 juillet 1869.

LE corps d'état-major créé par ordonnance du 6 mai 1818, et dont l'organisation a été successivement modifiée par les ordonnances

* See account of the Staff School, p. 145.

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des 10 décembre 1826, 22 février 1831, et 23 février 1833, comporte, sur le pied de paix, un cadre de 580 officiers fixé, par décret du 28 juin 1860,

à 35 colonels,
35 lieutenants-colonels,
110 chefs-d'escadrons,
300 capitaines,
100 lieutenants.

580 officiers.

Ce cadre, comparé à celui de l'ordonnance de 1833, présente une augmentation de 20 officiers; mais il est inférieur de 60 à celui de l'ordonnance de création, qui, sur la proposition du maréchal Gouvion Saint-Cyr, avait porté au chiffre de 640 officiers, y compris les lieutenants aides-majors d'infanterie, le personnel jugé alors indispensable pour assurer en tout temps le service d'état-major.

En outre, à cette époque, la partie scientifique du service était à peu près exclusivement réservée au corps spécial des ingénieurs géographes, séparé alors de celui d'état-major, réuni depuis à ce corps par ordonnance du 22 février 1831, et comprenant un cadre particulier de 72 officiers de tous grades.

Ainsi, en 1818, sous la restauration, dans la prévision de mobilisation d'armées que l'on ne supposait pas devoir dépasser le chiffre de 300,000 hommes, on estimait qu'un chiffre de 712 officiers était nécessaire pour satisfaire à tous les besoins.

Aujourd'hui, cet effectif est de 580.

Difference en moins, 132.

De là une insuffisance notoire au moment de l'entrée en campagne et l'extrême difficulté, pour ne pas dire l'impossibilité, d'assurer d'une manière convenable, lors du passage du pied de paix au pied de guerre, les services d'état-major aux armées et encore plus à l'intérieur.

Cette difficulté ne peut que s'accroître avec le développement de plus en plus considérable des armements modernes. Elle serait bien plus sensible encore dans le cas d'une guerre prolongée, la lenteur du recrutement annuel du corps ne permettant pas de réparer les pertes au fur et à mesure qu'elles se produisent.

Préoccupé de cette situation, j'ai dû, conformement aux intentions de l'Empereur, rechercher les moyens d'y remédier.

Augmenter le cadre, en portant le chiffre du personnel au niveau des besoins de l'état de guerre, outre l'accroissement de dépense qui en résulterait pour le budget, présenterait l'inconvénient de donner un nombre d'officiers hors de proportion avec les nécessités réelles du service en temps de paix.

Ce système écarté, il reste à examiner comment et dans quelle mesure il est possible d'y suppléer en puisant dans les corps de troupe des sujets capables, susceptibles dans un moment donné de devenir pour le corps d'état-major des adjoints utiles, et sans nuire à la bonne organisation du service dans les régiments eux-mêmes.

L'ordonnance du 23 février 1833 était entrée dans cette voie, et bien que modifiée dans quelques-unes de ses parties, elle donne encore aujourd'hui le moyen de résoudre la question.

Pour combler une insuffisance du cadre, déjà prévue à cette époque, et indépendamment dé la faculte accordée aux généraux d'employer un certain nombre d'officiers d'ordonnance, l'article 9 de l'ordonnance a conféré au ministre le pouvoir d'appeler, en temps de guerre, à remplir des fonctions d'état-major:

1°. Les officiers de troupe ayant servi dans le corps d'état-major et en étant sortis par permutation ou passés dans un autre corps, sur leur demande, au tour de la non-activité;

2°. Les officiers anciens élèves de l'Ecole d'application qui, ayant satisfait aux examens de sortie, n'ont pu, faute de vacances, être placés dans le corps d'état-major.

L'ordonnance du 16 mars 1838, n'autorisant plus les changements d'arme que par permutation, et exclusivement entre les sous-lieutenants, les lieutenants et les capitaines d'infanterie et de cavalerie, la ressource des officiers de la première catégorie pour le service des états-majors en temps de guerre a cessé d'exister.

Il n'en est pas de même de la seconde.

Si, en fait, il ne se trouve pas actuellement dans les corps d'anciens élèves sortis de l'Ecole d'application avec le titre d'admissible, cela tient uniquement à cette circonstance que, sauf une seule exception remontant à plus de trente ans (promotion du 1er janvier 1837), on s'est constamment attaché à n'admettre à cette école que le nombre d'élèves strictement nécessaire pour remplir les vacances de lieutenant dans le corps d'état-major.

Mais le principe posé par les articles 9 et 27 de l'ordonnance de 1833, et confirmé par l'article 131 de l'ordonnance du 16 mars 1838, n'en subsiste pas moins tout entier.

D'un autre côté, le décret du 24 avril 1858 dispose que chaque année le nombre des élèves à admettre à l'Ecole d'état-major sera déterminé par le ministre de la guerre, par abrogation des dispositions de l'ordonnance de 1838, qui limitaient à 50 le nombre des sous-lieutenants élèves pour les deux promotions de l'Ecole.

Rien ne s'oppose donc, au point de vue des règlements existants, à ce que ce nombre soit dès à présent dépassé.

Outre la possibilité de constituer par ce moyen, en peu d'années, au profit des services d'état-major une réserve importante, l'augmentation du nombre des élèves présenterait encore l'avantage non moins sérieux d'exciter parmi ces jeunes gens une émulation dont le résultat ne pourrait que contribuer à relever le niveau général de l'instruction des officiers d'état-major.

Elle ne serait pas moins avantageuse pour l'armée ; les officiers rentrant dans les régiments avec le brevet de capacité, y reporteraient l'instruction acquise à l'Ecole, le goût et l'habitude du travail, une coopération et des conseils qui tourneraient nécessairement au profit de la masse.

Présentée à diverses époques comme le complément indispensable de l'organisation du corps d'état-major, la proposition d'admettre à l'Ecole d'application un nombre d'élèves supérieur aux besoins réels se retrouve notamment dans les travaux de la haute commission chargée, en 1830 et 1831, sous la présidence du maréchal Molitor, de l'étude des diverses questions se rapportant à l'organisation de l'armée, et en particulier de l'état-major. La commission, dans un avis fortement motivé, en recommandait l'adoption immédiate.

Les considérations développées à cette époque, et dont s'est inspirée l'ordonnance de 1833, n'ont rien perdu de leur actualité ; l'expérience de nos dernières guerres et les besoins plus grands encore que fait prévoir l'avenir ne font qu'en confirmer la justesse.

Je pense donc qu'il importe de rentrer sans retard dans l'application des principes de l'ordonnance, et de décider que le nombre des élèves admis à l'Ecole d'état-major sera augmenté, chaque année, dans une proportion qu'il convient de laisser variable et à la disposition du ministre, en prévision des éventualités, mais que j'estime devoir être en moyenne de la moitié au moins du chiffre des besoins réels.

Ceux de ces élèves qui, après avoir satisfait aux examens de sortie, n'auront pu, faute de vacances, être classés dans le corps d'état-major,

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rentreront à leur régiment avec le titre d'adjoint d'état-major, et les avantages qui leur sont réservés par l'article 131 de l'ordonnance du 16 mars 1838.

En quelques années, les ressources ainsi accumulées dans les corps de troupe permettront de trouver, dans les grades de lieutenant et de capitaine, le nombre d'officiers nécessaire pour couvrir l'incomplet du cadre en temps de guerre.

Les fonctions dévolues aux officiers supérieurs ayant en général trop d'importance pour les confier à des officiers ne possédant pas une experience suffisante de la spécialité du service, l'affectation à un service d'état-major de quelques officiers supérieurs anciens admissibles des corps de troupe constituera, dans tous les cas, bien plutôt une exception qu'une règle sur laquelle il faille compter.

Mais il n'est pas douteux que les lieutenants, et les jeunes capitaines surtout, ne recherchent comme une faveur, dans les services d'état-major, des fonctions dans lesquelles ils peuvent se rendre très-utiles, et qui, bien que temporaires, n'en sont pas moins de nature, en les mettant en relief auprès des généraux, à exercer une influence des plus profitables pour leur avenir.

Comme instruction générale, et sauf la nuance résultant de la différence des numéros de classement, les garanties présentées par les officiers adjoints sont, à peu de chose près, les mêmes que pour leurs camarades de l'Ecole d'application passés comme titulaires dans le corps d'état-major; mais il leur manque ce complément si indispensable de l'instruction de l'officier d'état-major, la connaissance pratique des différentes armes, que procure le stage.

Il y aurait donc tout avantage à envoyer ces officiers, à leur sortie de l'Ecole d'application, passer deux années dans l'un des corps de l'arme différente de celle a laquelle ils appartiennent.

Considérés comme détachés pour un service spécial, ils ne cesseraient pas, dans cette position, de compter à leur régiment. Portés de droit sur le tableau d'avancement, aux termes de l'article 131 de l'ordonnance du 16 mars 1838, en sus du nombre fixé par les instructions sur les inspections générales, rien ne s'oppose à ce que, pendant le stage, ils continuent quoique absents, à concourir pour les premiers emplois de lieutenant vacants au tour du choix dans leur corps, qu'ils ne rejoindraient toutefois qu'à l'expiration des deux années d'instruction.

Pendant ces deux années, à défaut des fonctions d'adjudant-major qu'il serait difficile de leur confier, même comme lieutenants, en raison de leur peu d'ancienneté, ils trouveront encore dans les emplois de leur grade, dans les compagnies ou les escadrons, les moyens très-suffisants de s'instruire convenablement des détails particuliers du service de l'arme.

Rien ne manquerait alors à ces officiers pour en faire des suppléants excellents, surtout si, par des travaux d'études spéciaux, analogues à ceux exigés des lieutenants et des capitaines de seconde classe d'état-major, on s'attachait à entretenir en eux l'habitude du travail, tout en développant le cercle de leurs connaissances acquises.

En campagne, pendant la durée de leur service d'état-major, les officiers adjoints détachés des corps de troupe recevront la solde et les prestations attribuées à leur grade dans l'état-major, ainsi que cela a été réglé par l'article 9 de l'ordonnance du 23 février 1833.

Pour l'avancement et les récompenses, ils seraient dans la même situation que les officiers d'ordonnance employés auprès des généraux et, par conséquent, régis par les dispositions de l'article 60 de l'ordonnance du 16 mars 1838, c'est-à-dire qu'ils continueront de compter à leur régiment et d'y concourir pour l'avancement, aux mêmes conditions que les autres officiers du corps.

Toutefois, en ce qui concerne les capitaines, autres que les capitaines en second de cavalerie, en raison de l'inconvénient qu'il y aurait, surtout en campagne, de laisser vacant le commandement d'un certain nombre de compagnies ou d'escadrons, il est indispensable de se réserver la faculté de pourvoir, dans les régiments, au remplacement des officiers de ce grade, en les plaçant hors cadres lorsque le bien du service l'exigera, ainsi que cela a lieu pour les officiers en mission.

Je propose, en conséquence, à Votre Majesté de décider que les dispositions des articles 63 et 64 de l'ordonnance du 16 mars 1838, relatives aux officiers en mission pour un service militaire spécial, seront également applicables aux capitaines des corps de troupe détachés pour un service d'état-major en temps de guerre.

L'ordonnance du 23 février 1833 admettait ce remplacement des capitaines, mais elle spécifiait, en même temps, que ceux de ces officiers, ainsi remplacés à leur régiment, compteraient à la suite du corps d'état-major, y prendraient rang du jour où ils auraient été appelés, et y concourraient pour l'avancement.

Je n'ai pas besoin d'insister sur les inconvénients que présentait cette disposition, peu avantageuse du reste aux officiers, qu'elle prétendait favoriser, qui n'a jamais été appliquée, et que l'ordonnance de 1838 a virtuellement abrogée.

Mais il me paraît équitable, et je demande à Votre Majesté de rétablir en faveur des lieutenants et des capitaines adjoints d'état-major des corps de troupe la faculté d'entrer dans le cadre titulaire de l'état-major, par permutation avec des officiers de leur grade, et sous les conditions fixées par le troisième paragraphe de l'article 55 de l'ordonnance du 16 mars 1838, étant bien établi ce principe que, dans ce cas, pour les capitaines comme pour les lieutenants, le plus ancien de grade prendra toujours dans le corps et l'arme où il passe l'ancienneté de grade et le rang de l'officier moins ancien avec lequel il permute, afin qu'aucun droit légitimement acquis ne puisse s'en trouver lésé.

Ces permutations, effectuées sous le contrôle et l'autorité du ministre, limitées à une catégorie d'officiers déjà reconnus admissibles aux examens de sortie de l'Ecole d'application, et dont l'instruction pratique tendra à se rapprocher de plus en plus de celle des titulaires du cadre par le stage et les travaux d'études, présenteront au point de vue de la spécialité du service toutes les garanties désirables.

Elles seront, pour les adjoints d'état major, un stimulant et une juste compensation des obligations qui leur sont imposées, en même temps qu'elles permettront à quelques officiers d'état-major, ayant peu de goût pour ce service, de rentrer dans celle des deux armes vers laquelle se portent leurs préférences, et dans laquelle ils seraient susceptibles de rendre des services souvent beaucoup plus utiles. Enfin, j'y verrais le double avantage de procurer d'un côté à l'état-major des officiers ayant la pratique des troupes, et de l'autre, aux troupes, des officiers distingués par une instruction variée.

L'augmentation du nombre des élèves à l'Ecole d'application soulève une question subsidiaire dont je demande également à l'Empereur la permission de l'entretenir.

Sous le régime de l'ordonnance de 1833, en dehors des trois places réservées aux élèves sortant de l'Ecole polytechnique, les 30 premiers élèves de l'Ecole spéciale militaire* étaient seuls admis à concourir, avec 30 sous-lieutenants de l'armeé, pour l'admission à l'Ecole d'état-major.

Pour contrebalancer l'effet des renonciations qui, par une diminution assez sensible dans le nombre des candidats, menaçaient de rendre les concours à peu près illusoires, il fut décidé (article 45 du décret du

* *i.e.* the School of St. Cyr.

APPENDIX G.

French Staff School.

11 août 1850) que 30 élèves désignés dans l'ordre successif des numéros de sortie de Saint-Cyr, parmi ceux qui en auront fait la demande, seraient appelés à prendre part à ces concours.

Enfin, toujours dans la pensée d'étendre davantage le cercle du choix, le décret du 8 juin 1861, aujourd'hui en vigueur, pose en principe que le nombre des candidats de cette catégorie, admis à l'examen, sera le double du chiffre des élèves à recevoir.

En face d'une telle extension, il est permis de se demandersi l'on n'a pas dépassé le but et si, en forçant au delà du nécessaire la concurrence, on ne s'expose pas au contraire à nuire au bon recrutement de l'Ecole.

Les incertitudes de la lutte, les déclassements quelquefois profonds qui en sont la conséquence, ont peut-être éloigné, sans que l'on s'en doute, bon nombre de premiers numéros de la liste de sortie de l'Ecole militaire.

L'année dernière, pour une promotion, de 18 élèves, 36 ont été admis à l'examen et l'on est descendu jusqu'au numéro 59 de la liste de Saint-Cyr; avec des promotions de 30 à 35 élèves et des concours de 60 à 70 candidats, jusqu'à quel numéro ne sera-t-on pas forcé de descendre?

Dans ce système, on ne semble pas avoir tenu assez compte de cette circonstance que le classement à la sortie de Saint-Cyr, résultant des notes obtenues par les élèves, non-seulement aux examens de fin de cour, mais encore pendant les études de deuxième et première division, présente les garanties les plus sérieuses, et dont à d'autres points de vue il serait même dangereux de laisser suspecter la réalité.

Des examens particuliers en vue du service spécial auquel doivent être appelés les officiers du corps d'état-major ont une importance incontestable.

De là l'utilité des concours, et tant que le nombre des élèves admis à l'Ecole d'état-major n'a pas dépassé le chiffre des besoins annuels du recrutement du corps, ces concours ont dû nécessairement précéder l'admission.

En présence de l'augmentation du nombre des élèves, cette disposition n'a plus la même raison d'être. Avec la facilité qui en résulterait d'éliminer, soit pendant la durée du séjour à l'Ecole, soit à son expiration, ceux des sous-lieutenants élèves n'offrant pas des conditions d'aptitude suffisantes, c'est au moment de la sortie que doit avoir lieu le vrai concours. Les classements définitifs, après deux années d'étude et d'observation non interrompue, donneront sous ce rapport des garanties bien plus certaines, bien plus complètes que celles résultant des examens spéciaux actuels d'admission.

Il n'y a plus dès lors de motifs sérieux, au point de vue de la bonne composition du corps, pour ne pas admettre directement et sans nouvel examen les premiers élèves de Saint-Cyr, ainsi que cela a eu lieu dans l'origine, de 1820 à 1832, et comme cela s'est fait de tout temps pour les élèves sortant de l'Ecole polytechnique.

En proposant à l'Empereur la suppression des examens du concours d'admission pour les élèves de l'Ecole militaire, il n'entre pas dans ma pensée de fermer l'accès de l'Ecole d'état-major, et par suite du corps, aux sous-lieutenants de l'armée. Le corps d'état-major en a reçu des sujets excellents, et la participation d'un certain nombre d'officiers aux travaux d'étude qu'exigent les concours contribue, en outre, pour sa part, à relever le niveau de l'instruction dans les régiments.

Mais rien ne s'oppose à ce que les sous-lieutenants de l'armée concourent ensemble, en continuant pour ces candidats le mode d'examens actuellement en usage et pour un certain nombre de places qui serait chaque année fixé par le ministre; sauf, en cas d'insuffisance dans le

chiffre des admis, à compléter ce nombre au moyen d'une liste supplémentaire d'élèves de l'Ecole militaire.

Si Votre Majesté daigne approuver les diverse propositions continues dans le présent rapport, je la prier de vouloir bien revêtir de sa signature le projet de décret ci-joint.

Je suis, avec le plus profond respect, Sire,

De Votre Majesté le très-obéissant, très-dévoué serviteur et très-fidèle sujet, le maréchal de France, ministre de la guerre,

NIEL.

NAPOLÉON, par la grâce de Dieu et la volonté nationale, Empereur de Français, à tous présents et à venir, salut :

Vu l'ordonnance du 23 février 1833, sur l'organisation du corps d'état-major :

Vu l'ordonnance du 16 mars 1838, sur l'avancement et la nomination aux emplois dans l'armée :

Vu le décret du 24 avril 1858 :

Sur le rapport de notre ministre de la guerre, avons décrété et décrétons ce qui suit :

Art. 1er. Le nombre des élèves à admettre à l'École d'application d'état-major sera augmenté dans une proportion supérieur au chiffre des besoins présumés du recrutement du corps d'état-major, qui sera déterminée chaque année par notre ministre de la guerre.

Art. 2. Les sous-lieutenants élèves à l'Ecole d'application qui, après avoir satisfait aux examens de sortie, n'auront pu, faute de vacances, être placés dans le corps d'état-major, rentreront à leur régiment avec le titre d'adjoint d'état-major, et avec les avantages réservés à cette catégorie d'officiers par l'article 131 de l'ordonnance du 16 mars 1838.

Art. 3. Ils ne prendront toutefois possession de leur emploi qu'après avoir passé deux ans, comme détachés, dans un corps de l'arme différente de celle à laquelle ils appartiennent.

Art. 4. Les officiers du grade de sous-lieutenant, de lieutenant et de capitaine, adjoints d'état-major, seront astreints aux mêmes travaux d'étude annuels que les lieutenants et les capitaines du corps d'état-major.

Art. 5. Les lieutenants et les capitaines pourront être appelés, en temps de guerre, à remplir des fonctions de leur grade dans les services d'état-major, soit aux armées, soit à l'intérieur.

Art. 6. Pendant la durée de leur service d'état-major, ces officiers seront régis par les dispositions de l'article 60 de l'ordonnance du 16 mars 1838 relatives aux officiers d'ordonnance employés auprès des généraux. Ils recevront la solde et les prestations attribuées à leur grade dans l'état major.

Art. 7. Les capitaines, autres que les capitaines en second de cavalerie, pourront, lorsque le bien du service l'exigera, être remplacés à leur corps, et, dans ce cas, les dispositions des articles 63 et 64 de l'ordonnance du 16 mars 1838, concernant les officiers en mission pour un service militaire spécial, leur sont applicables.

Art. 8. Les lieutenants et les capitaines adjoints d'état-major dans les corps de troupe pourront, s'ils ont l'aptitude nécessaire, être admis à entrer dans le cadre titulaire du corps d'état-major, avec leur grade, par permutation avec des officiers de ce grade, et sous la condition expresse que, conformément aux dispositions du troisième paragraphe de l'article 55 de l'ordonnance du 16 mars 1838, le plus ancien de grade des deux permutants consent, par le seul fait de la permutation, à prendre dans le

Appendix G.
French Staff School.

corps et l'arme où il passe l'ancienneté de grade et le rang de l'officier moins ancien avec lequel il permute.

Art. 9. Les élèves sortant de l'Ecole spéciale militaire seront admis directement à l'École d'application d'état-major, sur leur demande et dans l'ordre de leur classement de jortie, jusqu'à concurrence du nombre de places de sous-lieutenant élève attribué, chaque année, par notre ministre de la guerre aux élèves de cette Ecole dans la promotion de l'Ecole d'application.

Art. 10. Les sous-lieutenants de l'armée autorisés à se présenter pour l'admission à l'Ecole d'application d'état-major continueront à concourir, mais seulement entre eux et pour le nombre de places qui sera également fixé chaque année par notre ministre de la guerre.

En cas d'insuffisance dans le nombre des admis de cette catégorie, il y sera supplée au moyen d'une liste supplémentaire d'élèves de l'Ecole spéciale militaire, établie comme il est spécifié à l'article 9 ci-dessus.

Art. 11. Notre ministre de la guerre est chargé de l'exécution du présent décret.

Fait au palais de Saint-Cloud, le 19 juillet 1869.

Napoléon.

Par l'Empereur :
Le maréchal de France, ministre de la guerre,
Niel.

Appendix H.
Letter from Colonel Walker.

APPENDIX H.

PRUSSIA.

Letter from Colonel Beauchamp Walker, C.B., Military Attaché to the Legation at Berlin, on the subject of early Military Education.

" My dear Hozier, Berlin, 19th October 1868.

" Recurring to the subject of our recent conversation, I have thought it as well to put my opinions on preliminary military education on paper, and to place them at your disposal to use in any manner you may think best.

" After having devoted great consideration to the subject, aided also by the experience gathered in other countries, I have formed a conclusion unfavourable to the extension of military schools. I beg that I may not be misunderstood. I have formed no opinion adverse to military education, to which I have devoted the whole of a not uneventful life; but I think that an exclusively military education should only be pursued after the profession has not only been selected but entered. The great mistake made in our army is that all education ceases after the receipt of the first commission.

" All peculiar or class education is hostile to freedom of thought. In no profession should a measure having this tendency be more carefully avoided than in the military, where the practice of a rigid discipline naturally tends to direct the mind into a narrow groove. Even if the education provided at our sole military school for the line were as good as that afforded by the best public and private schools, which I have every reason to believe is not the case, I should object to limiting the receipt of commissions in the army to those only who had passed

through a military school which they were obliged to enter in early youth. The course of education at such establishments is never liberal enough, and does not advance with the times; while the military or rather semi-military nature of the disciplinary arrangements is not suitable for English boys. I consider the Prussian plan, by which every officer, with rare exceptions (as in the case of university graduates), has to pass through the *Kriegs-Schulen*, as most admirable, but what I object to is the preliminary narrowing military education.

" It is in total opposition to the feeling and principles of our institutions that the officers of the army should form a class separated from those of their own rank in life serving in other professions; but it is a result which will surely be attained if candidates for entry into the army are brought up from an early age at special military schools. This system would further result in the profession being selected only by the parents at an age when the boy would be incapable of choosing for himself.

" This class education from an early age is not the case with the church, the bar, the medical, or any other profession, and I see every reason to object to its being imposed on my own.

" I have had a great deal of conversation on this subject with officers of rank in Prussia, and the impression produced by their information has tended to confirm the opinion previously formed. I find a very general impression that it is preferable that, as at present, the majority of the officers should be furnished by the system of *Avantageurs*, and not from the cadet schools. By subjecting all candidates for entry into the army as officers to the technical education of a merely military school, you virtually render them almost incapable of turning their minds readily to other than military pursuits, in the event of the claims of property, failure of health, or other causes inducing a desire to quit the army. The education will not, can not, be large enough for other purposes, and will never rise above mediocrity. We should enter on the race of life with our companions and cotemporaries, be educated in company with them up to a certain standard, and then only devote a necessary interval to the acquirement of a technical education, and of exclusive attainments suited only to the military career.

" Some of the reasons which I have adduced are more strongly affected by considerations connected with our institutions than is the case in this country, where virtually all must serve in the army, and practically every institution is pervaded by a military spirit.

" When, however, I find it acknowledged by men of high rank in the Prussian army, thoughtful and educated gentlemen, animated also by the strong military tone which so universally prevails, that a purely military education tends to narrow the views of those who should not only be officers but also men of the world, how careful should we be before we extend the system in our own country, and enter on a course tending to make the officers of the army a class *per se*, and not, as I believe us to be at present, active and interested members of the body corporate, and as proud of our citizenship as we are of the noble profession to which we belong.

" I should like to see a system somewhat analogous to that of the *Kriegs-Schulen* in Prussia introduced in England. If the country is willing to afford a cheaper education than can be elsewhere obtained to the sons of officers who are willing that their children should be so brought up, I grant that Sandhurst must be retained; but I should like to make attendance at a military college, similar to the *Kriegs-Schulen* in Prussia, compulsory on all who had passed the examination for officer, whether at Sandhurst or before the board at Chelsea; but that the period

APPENDIX H.

Letter from Colonel Walker.

of attendance should not exceed a year, including the necessary interv al of rest. I think it may be assumed that all candidates receive their commissions within about this period after passing the examination, which I would also allow to be passed at the age of 17. I have merely thrown this out as an idea, formed, however, after much deliberation, and based on my desire to combine an avoidance of purely class education with that amount of knowledge which I hold to be indispensable.

"Believe me, my dear Hozier, very faithfully yours,

"BEAUCHAMP WALKER,
"Colonel."

APPENDIX I.

Memorandum by Lieut.-Gen. von Holleben.

APPENDIX I.

PRUSSIA.

MEMORANDUM COMMUNICATED BY LIEUTENANT-GENERAL VON HOLLEBEN ON THE SUBJECT OF EXAMINATIONS FOR ADMISSION TO THE ARMY.

(1.) The supreme management of the system of military education should be placed in the hands of a single individual. A commission or board does not appear suitable for such duties, but a consultative council composed of scientific men should be added for the purpose of advising the director.

(2.) The boards of examiners should be independent, and there should be as few changes of members as possible. Each board should have a president. The fewer boards there are for similar descriptions of examination the better. The best of all is to have only *one* board, with *one* really able and first-rate examiner for each subject.

(3.) The requirements should be raised by degrees, perhaps once in every ten years, and alternately with respect to the number of subjects and the standard exacted in each (*extensiv und intensiv*):—

(*a.*) At first moderate requirements and lenient examinations.
(*b.*) The same requirements, but a more strict examination.
(*c.*) If this has been carried out satisfactorily, the number of subjects required may be increased, the examination being at first lenient, and at a subsequent stage more severe.

Circumstances may, however, render it necessary temporarily to relax the strictness of the examination.

The capabilities of the educational establishments to be influenced by the examinations must also be considered. Examinations and schools always exercise a reciprocal influence upon each other.

Berlin, 28th October 1868. VON HOLLEBEN.

APPENDIX J.

PRUSSIA.

Prussian Portepée-fähnrich Examinations.

SPECIMENS OF EXAMINATION QUESTIONS SET IN THE PORTEPÉE-FÄHNRICH EXAMINATION.

N.B.—The choice is allowed between each pair of questions.

FIRST PAPER.

Mathematics.

1. In the expression $\frac{x+y-1}{x-y+1}$ substitute for x the value $\frac{a+1}{ab+1}$ and for y the value $\frac{a(b+1)}{ab+1}$ and reduce the expression to its simplest form.
2. Simplify

$$3\sqrt{12} - 5\sqrt{1\tfrac{1}{3}} - \sqrt{3} + 4\sqrt{\tfrac{1}{12}} - \sqrt{27} \times 2\sqrt{\tfrac{3}{4}} - \sqrt{3}.$$

3. Find the rate of interest at which a sum of money will double itself in 12 years at compound interest.
4. In sinking a well 30 feet deep the first foot costs 20 gr. 24 pfs.; the cost of each succeeding foot increases by 20 pfs. What is the cost of the last foot, and of the whole well?

5. To construct an isosceles triangle when the sum of the three sides and the altitude are given.
6. Three points A, B, and C being given, to draw a line through A, so that the distances from B and C to this line are together equal to a given line.

7. Given the two angles A and B of a triangle, and the sum of the two sides $a + b$, find a and b.
8. To find the area of a segment of a circle when the chord and the arc are given.

History.

1. Athens to the time of the Persian war.
2. Rome under the kings.

3. Henry the Third.
4. The second half of the 14th century.

5. The wars in Italy from 1434 to 1516.
6. The second period of the Thirty Years' War.

7. The relations of Frederic the Great with the house of Wittelsbach.
8. The House of Hohenzollern.

Geography.

1. Eclipses of the sun and moon.
2. The volcanic energy of the earth.

3. The rivers of Africa.
4. The mountains of Scandinavia.

5. The course of the Oder.
6. The German Jura.

French.

Dictation and translation from French, and translation from German into French.

APPENDIX J.

Prussian Portepée-fähnrich Examinations.

German themes.

1. Why are the Greeks, Romans, and Germans called cultivated nations?
2. A shepherd and a traveller on an ancient battle field.

Latin.

Translations from Cæsar and Livy.

SECOND PAPER.

Mathematics.

1. Find the value of $\frac{4a-3b+c}{3a-b}+\frac{5c+4b}{2a+2b}$ if $a=5$, $b=2\frac{1}{2}$, $c=7$.
2. In 1079 Persian calendars there were in every 33 years eight leap years and 25 ordinary years. What was the average length of the year, and by how much did it differ from the actual length of the year, which is 365·2421227 days?
3. Solve the equation,
$$\frac{7x-13}{5x-6}=\frac{8x-10}{6x-13}$$
4. At a depth of 200 feet below the surface of the earth the temperature is 4·5°, and below this point for each 115 feet of descent the temperature increases 1°. At what depth is the temperature 24·5°?
5. Two similar four-sided figures are in the same proportion as their homologous sides.
6. In a right-angled triangle the hypothenuse = 5, and the area = 6 square units. Find the two angles.
7. The side of a regular nonagon is 1. What is its area?
8. The solution of a triangle when one side and two angles are given.

History.

1. The Peloponnesian war.
2. Marius and Sulla.
3. The two first sovereigns on the German throne after the extinction of the Saxon dynasty.
4. Louis of Bavaria.
5. Napoleon's accession to the throne and first war as emperor.
6. The first coalition against France.
7. The year 1814.
8. Frederic William the First.

Geography.

1. The seasons.
2. The form and magnitude of the earth.
3. The journey from Berlin to Rome.
4. The possessions of the English in Asia.
5. The Bohemian mountains.
6. The province of Hesse.

German themes.

1. Why is Sleep called the Brother of Death in mythology?
2. A collision between two railway trains.

French.

Dictation and translation.

Latin.

Translations from Cæsar and Livy.

THIRD PAPER.

Mathematics.

1. A farmer had two labourers who worked with him for the same day's wages. To one he gave for 56 days' work 4 bushels of rye and 14 thalers cash; to the other, for 84 days' work $7\frac{1}{2}$ bushels of rye and $17\frac{1}{4}$ thalers. At what price was a bushel of rye reckoned, and what was the amount of the daily wages?
2. Solve the equation,

$$\left\{(a^2-b^2)\,x-1\right\}^2+(2\,a\,b\,x-1)^2 = \left\{(a^2+b^2)\,x+1\right\}^2.$$

3. Simplify the expression

$$\frac{(a+b+c)^3\ (a+b+c)^2}{(a+b+c)\ (a+c)\ (b+c)}$$

4. The third term of an arithmetical series is -5, the ninth term is 27. Find the series.
5. In a trapezoid one of the sides which are not parallel to each other is 8 feet long; the angle at which the sides which are not parallel cut each other, if produced, is $12°\ 8'\ 17''$. Find the length of the second of these two sides.
6. To divide a square into three equal parts so that the lines of division shall be parallel with one of the diagonals.
7. What is the height of a figure which casts a shadow of 182 feet in length when the sun is 18′ above the horizon?
8. Prove the equation,

$$\text{Cotan}\ \alpha - \tan\alpha = 2\ \text{cotan}\ 2\,\alpha.$$

Geography.

1. The barometer and thermometer.
2. Through what seas, countries, and islands does the meridian which passes through Ferro run?
3. The peninsulas of the world.
4. The mountains of northern Africa.
5. The central Alps.
6. The journey by land from Berlin to St. Petersburg.

History.

1. Alexander the Great.
2. The second Punic war.
3. Henry the Eighth and his era.
4. The Anglo Saxons in Britain.
5. Richelieu.
6. The rise of the kingdom of Belgium.
7. The acquisition of the province of Pomerania.
8. The generals of Frederic the Great.

APPENDIX J.

Prussian Portepée-fähnrich Examinations.

German themes.

1. He who will not work in summer
   Must in winter suffer hunger.
2. The value of friendship.

French.

Dictation and translation.

Latin.

Translations from Cæsar and Livy.

A few further specimens of questions in geography, history, and German are added:—

Geography.

The zodiac.
The phenomena of the atmosphere connected with light and rain.
The path of the moon.
Climate mathematically and physically considered.
The sidereal and calendar month.
The Western Alps.
The affluents of the Elbe on the right bank.
The Garonne.
The states of South America.
The free towns of Germany.
The Gulf stream.
The Japanese islands.
The Ural mountains.
The basin of the Saal.
Geographical account of Russia.
The ports of Great Britain.
The grand duchies of Germany.
The chief mountain chains of Europe.

Ancient History.

The constitution of Lycurgus.
The wars of the Greeks against the Persian invasions.
The wars of the Romans to the time of the first secession of the Plebs.
The war of Pyrrhus against Rome.
The wars between Greece and Persia subsequent to the Peloponnesian war.
Constantine.
The overthrow of the independence of Greece.
The agrarian laws at Rome.
The march of Xerxes.
The disputes after the death of Alexander the Great.
The life and influence of Cæsar previous to the civil wars.
The first civil war in Rome.

Modern History.

The share taken by the German emperors in the wars of the Crusades.
The kingdom of the Lombards.
The progress of the Franks under Clovis and his sons.
The contests of the German emperors with the Lombard towns.
The expeditions of the Normans.
The foreign wars of Charles the Fifth.
The German towns in the middle ages.
The expedition of Frederic Barbarossa to Italy.

Prussian Portepée-fähnrich Examinations.

A description of the Swiss Confederation, and the liberation of the country from subjection to Austria.
The Netherlands under Philip the Second.
Elizabeth of England.
Catherine the Second.
The war of the Spanish succession up to the year 1706.
The Reformation in England, and its results.
Tilly and Wallenstein.
The wars between Austria and France from 1805 to 1809.
The rise of the United States of North America.
The French Revolution up to the time of the execution of the king.

History of Prussia.

The rise of Prussia to a kingdom, and the first battles of Prussian troops.
The two first Electors of the house of Hohenzollern.
How did Prussia acquire Brandenburg?
The generals of the Seven Years' War.
The reign of Frederic William the Third up to the year 1806.
The career of Blucher.
The year 1806.
Prussia from 1807 to 1814.
The year 1815.

Subjects for German themes.

The invincible Armada.
Non multa sed multum.
The influence of geographical circumstances on the civilization of the Greeks.
An outbreak of fire in a village.
The time and manner of a person's laugh show his character.
The chase in autumn.
The gods require many men upon earth for their service; they have reckoned upon you also.
"The ice bears" (description of boys' life).

APPENDIX K.
UPPER CADET SCHOOL AT BERLIN.

WINTER COURSE, 1868.

TABLE of the DISTRIBUTION of TIME for the HIGHEST CLASS, or SELECTA.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8–9	Science of Arms.	Fortification.	Science of Arms.	Surveying and Topography.	Tactics.	Science of Arms.
9–10	Surveying and Topography.	Do.	Do.	Do.	Fortification.	Do.
10–11	Plan Drawing.	Tactics.	Fortification.	Fortification.	Military Regulations, &c.	Military Regulations, &c.
11.15–12		Do.	Riding.	Tactics.	Do.	Riding.
12–1	Bayonet Exercise.	—		Do.	—	
2.45–4.30	—	Tactics.	Mathematics (voluntary).	—	Fortification.	—

UPPER CADET SCHOOL AT BERLIN.

Table of the Distribution of Time for the Prima.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8–9	Mathematics.	French.	Geography.	German.	Geography.	German.
9–10	Do.	German.	Religious Instruction.	Geography.	French.	Mathematics.
10–11	French.	Physics.	French.	Physics.	Latin.	Do.
11.15–12	Latin.	Latin.	Drawing.	Latin.	Mathematics.	Latin.
12–.	History.	History.	Do.	History.	Religious Instruction.	History.
3.30–4.30	—	—	—	—	Fencing.	—
4.30–5.30	Gymnastics.	—	—	Military Instruction.	Gymnastics.	—
6.30–7.30	Fencing.	—	—	—	—	—

UPPER CADET SCHOOL AT BERLIN.

TABLE of the DISTRIBUTION of TIME for the SECUNDA.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8–9	French.	German.	Mathematics.	Mathematics.	Mathematics.	Physics.
9–10	Mathematics.	Mathematics.	German.	Geography.	Geography.	Mathematics.
10–11	Religious Instruction.	Latin.	French.	Latin.	German.	Latin.
11.15–12	Latin.	French.	Latin.	Drawing.	Religious Instruction.	History.
12–1	Physics.	Geography.	History.	Do.	Latin.	French.
2.45–3.30	—	Writing.	—	Military Instruction.	Writing.	—
3.30–4.30	Gymnastics.	—	—	—	Gymnastics.	—
5.30–6.30	—	Dancing.	—	—	—	Singing.

APPENDIX L.

PRUSSIAN CADET CORPS.

Regulations for the Discipline of the Corps.

Berlin, 8th June 1864.

The infliction of punishments in all the establishments of the cadet corps is regulated by the order issued by the commander of the corps, dated 25th June 1852; the spirit of this order, however, is not always observed. Cases are at present under my notice in which young officers, employed as tutors (*Erzieher*), have, to some extent, overstrained the power of punishment conferred upon them, in the belief that it is necessary to the maintenance of their authority. The authority of a tutor is not secured by his power of inflicting punishment (*Strafgewalt*). I trust, on the contrary, that the officers will make it their object to secure respect and obedience by acting on higher principles, by displaying kindness towards the pupils, by leading them with gentle earnestness, by working with patience upon their convictions, and by exhibiting self-denial in the endeavour to render them every possible assistance. In this way the tutors will be enabled to fulfil their duty, which is above all things to spare and foster the better feelings of the pupils, and to prevent the commission of offences which must entail punishment. It is only after moral influence has failed, and admonitions and warnings have been found to produce no result, that the tutor should appeal to the force of punishment.

This power should only be placed in the hands of a few persons of prudence, experience, and impartiality, who are not liable to be carried into extremes.

The captains of companies will, I trust, weigh every case of punishment, and carefully consider all its circumstances; they should, therefore, keep the management of the pupils chiefly in their own hands—of course resorting to punishment when it is deserved, but employing it, not like a master under the influence of excitement and anxious to vindicate his own authority, but like a prudent parent actuated by affectionate regard for the welfare of his sons, and adapting it in each case to the character of the individual and the nature of the offence.

In accordance with the above principles I hereby direct—

A. That in future in all the establishments of the cadet corps the authority of the tutors (subaltern officers) shall be limited to:—

(1.) Administering reprimands, with or without the additional punishment of entering the reprimand in the defaulter book.

(2.) Inflicting punishment parades (*Strafmeldungen*) on the cadets of the section immediately under their charge.

One punishment parade at the outside appears to be perfectly sufficient punishment for one and the same offence; but these parades are only to be ordered during the recreation hours, *never* during the hours of private study (*Arbeitstunden*), meal times, leave of absence, before roll-call, or after bedtime. During the instruction lessons the tutors, in their capacity of instructors, have only the right conferred upon every instructor of reporting irregularities through the company report book.

B. The inferior disciplinary powers conferred upon the captains of companies, or their representatives, comprise—

(*a.*) Minor punishments:

1. Reprimand, either in private, before the members of the offender's room, or before the whole company.
2. Extra turns of daily duty (*Straf du jour*).

3. Extra guards on week days or Sundays.*
4. Punishment parades in a certain uniform, under the limits already prescribed.
5. Deprivation of pocket money for a month.†
6. Punishment study (*Strafarbeitstunde*) on week days.
7. Curtailment of leave of absence on Sundays and holidays, either by the offender being made to report himself at fixed hours, or by his being kept in for punishment study. The maximum curtailment of leave is not to exceed two hours, either at the commencement or before the termination of the time allowed for leave.
8. Deprivation of half of the evening meal†; the dinner is *never* to be curtailed.

(*b.*) More serious punishments:

(1.) Forfeiture of leave of absence on one Sunday or two successive holidays, accompanied or not by punishment study.
(2.) Deprivation of the privileges of the first or second censure class for a period of four weeks at the outside.
(3.) Reduction from the second to the third censure class.
(4.) Arrest in quarters (*Stuben-arrest*) up to three days.
(5.) Company arrest (*Compagnie-arrest*) up to three days, either with ordinary diet or on bread and water. Arrest is not to be inflicted for periods of *less than* 24 hours; the cadets, however, of the Sexta, Quinta, and Quarta are not to pass the night in the place of confinement, although the time is to be calculated as part of the duration of the punishment. For all the cadets, attendance at lessons is suspended during the period of arrest.

C. The higher disciplinary powers comprise—

(1.) Forfeiture of a portion of the vacation.
(2.) Corps arrest.
(3.) Reduction from the third to the fourth censure class.
(4.) Suspension from the duties of a non-commissioned officer.
(5.) Reduction to the ranks.
(6.) Dismissal from the cadet corps.

Dismissal from the corps as well as reduction to the ranks, at the Berlin cadet house, in the case of under officers who wear the *Portepée*, can be inflicted only by the commander of the corps; the other punishments can be inflicted by the commandants of the various institutions, or their representatives.

Every tutor will still, as heretofore, have the right of placing a cadet at once under arrest when, in extraordinary cases, the necessity arises for such an extreme measure. In such a case the tutor is required to make an immediate report of the step to the captain of the company. It rests with the latter to enforce the performance of the punishment or not, and to determine its duration.

All punishments here mentioned are to be entered in the defaulter book against the name of the cadet punished—the precise character of the offence, the date of the infliction, and the duration of the punishment being added. In the defaulter book there is to be a page for each cadet, in which the minor and serious punishments are to be entered in separate columns. On the 1st of every month the captains of companies are to send in the defaulter books to the commandant.

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* This punishment is not now inflicted, as the cadets no longer mount guard.
† These two punishments are only inflicted at the junior schools.

In conclusion, the commandants of the various schools are requested to exercise equal strictness in preventing the abuse of the disciplinary authority conferred on officers, and the assumption of unauthorized powers of punishment. They are also requested to be careful that the punishments here prescribed and no others are inflicted, and that the infliction of punishment is not made too general. The punishment must at once follow on the offence if it is to be effectual. It is further to be borne in mind that one and the same offence should only be punished by *one* authority, and therefore more than a *single* punishment is never to be inflicted for it. I cannot, for instance, permit the deprivation of leave of absence on Sunday, following upon punishment inflicted during the week, to be regarded, not as an actual punishment, but as a resulting consequence of the punishment; it is in my opinion a second and more severe punishment for the same offence, and this is contrary to the judicial estimate of a punishment.

Additional Regulations for the Berlin Cadet House.

The punishments which can be inflicted upon the *Selectaner* are:—

1. Reprimand in private, in the presence of the *Selectaner* of the company, or of all the *Selectaner* in the corps.
2. Punishment parades, extra turns of duty, deprivation of leave of absence.
3. Forfeiture of the privileges of the first censure class, arrest in quarters (*Stuben-arrest*).
4. Company arrest up to three days may be inflicted on such *Selectaner* as do not wear the *Portepée*.
5. Suspension from the duties of the *Selectaner*.
6. Reduction to the rank of private.
7. Dismissal from the institution.

The last two punishments can only be inflicted by the commander of the corps. In the infliction of punishments upon the *Selectaner*, who in a year's time will be officers, it is requested that double caution and the most careful consideration may be exercised.

THE COMMANDER OF THE CADET CORPS.

APPENDIX M.

PRUSSIAN WAR SCHOOLS.

1. REGULATIONS FOR THE ORGANIZATION OF THE WAR SCHOOLS.

The War Schools are intended to afford a professional education to candidates for commissions.

The schools are under the sole control of the Inspector General of Military Education; this officer also recommends to the sovereign the candidates for appointments on the general and professorial staff, and the officers who are to be attached for duty to the establishments.

The officers who hold appointments at the schools, as well as the students, are to be considered as detached from their regiments, and in all matters of discipline and interior economy are placed under the immediate authority of the director (who occupies the position of the colonel of a regiment towards them), and, above him, are under the authority of the Inspector General of Military Education.

In regard to military jurisdiction, all the staff and students of the War Schools are subject to the regulations laid down in the Articles of War.

In all matters affecting the conduct of officers and gentlemen, the officers of each War School constitute a court of honour under the superintendence of the director. The decision upon all recommendations made by these courts rests with the Inspector General of Education. Reports on the character and qualifications of the officers and students are forwarded by the director to this officer.

The directors and the instructors during the period of their employment are seconded from their regiments; they draw their pay from the school funds, and constitute for the time being a special corps of officers. An appointment to this corps constitutes in itself a recognition of the possession of scientific and practical qualifications; and the officers appointed to it serve the double object of providing the schools with a constant supply of military talent, and of introducing into the army a tone of high intellectual culture on their return to their regiments. Distinction in the performance of duties at the War Schools will have important influence on the subsequent professional advancement of officers.

Each War School has an officer of the staff as director, and eight captains as instructors in the military subjects of study, which are—

1. Tactics.
2. Science of arms.
3. Fortification.
4. Topography, surveying, and military drawing.

The instructor in tactics is also charged with the instruction in military regulations. A course of instruction in military official correspondence is entrusted to the instructor, who, from existing circumstances, is most fitted for it.

In addition to the above regular staff of director and instructors, six lieutenants are attached to each school, with the title of inspection officers, for the purpose of exercising a constant superintendence over the students, of giving assistance in the instruction, especially during the practical period of the course, and of giving instruction in riding, fencing, gymnastics, and drill; of these, two must be cavalry officers, and two must have gone through a course of instruction at the central school of gymnastics. Each inspection officer receives for this duty from the funds of the school an addition of 100 thalers a year to his pay, and the officer employed as adjutant receives another 100 thalers a year.

Every candidate for a commission is required to pass through a course of instruction at a War School before being admitted to the officers' examination. Besides those who are actually *Portepée-fähnrich*, such non-commissioned officers and privates may be admitted as have passed the examination for the rank of *Portepée-fähnrich*.

Those young men may at their option be specially exempted from attendance at a War School who have obtained a first-class certificate of fitness for admission to a university, and have studied for a year at a Prussian university, on producing certificates of this fact as well as of good conduct.

No candidate can be admitted to a War School unless he has served at least from five to six months with his regiment, and has obtained a certificate of thorough practical acquaintance with his duty.

The course embraces a period of ten months. It begins on the 1st of October and ends on the 31st of July of the following year. It is divided into two parts. The first, or theoretical course, lasts for eight months and a half, from the 1st of October to the middle of June of the following year, and includes not only all the theoretical lectures, as well as practical exercises and lessons of application connected with them, but also exercises in gymnastics and drill. The second part, which lasts for a month and a half, consists of a practical course directly connected

with the first, the object of which is to teach the practical application to professional purposes of the theoretical knowledge previously acquired.

All the students are distributed into parallel classes. As a rule not more than 30 students are to be placed in the same class. They are to be as far as possible of the same degree of attainments, so that the abler students may not be kept back by those who are more backward.

At the end of each quarter reports upon each student are sent in by all the instructors, and are entered in a book which is kept by the director. At the termination of the whole course the general result of these reports is determined at a meeting of all the instructors, presided over by the director. In accordance with the decision arrived at at this meeting a written certificate is made out for each student, stating whether he is qualified for admission to the officers' examination. No one can be admitted to the examination unless this decision is in the affirmative.

Those who, after passing through a course of instruction, have not qualified themselves for admission to the officers' examination may, in the case of extenuating circumstances and of unquestionably good conduct, be admitted to a second course, which, however, is the last trial allowed them.

All students who are guilty of irregularities of moral conduct, or of neglect in the discharge of their duties, after measures of discipline have been tried and have had no effect with them, are, without exception, to be dismissed from the establishment.

So far as the accommodation admits the students are lodged in the buildings; the inspection officers also have quarters among those of the students, in order to enable them to exercise a surveillance over the latter. There is a general mess dinner daily, at which the inspection officers are expected to dine.

At the beginning of August, after the conclusion of the annual course, both the students and the officers attached to the schools return to their regiments, in order to take part in the autumn manœuvres of their respective army corps. The directors and officers of the permanent staff of the schools are also, for the same purpose, appointed by the War Office to do duty with regiments.

The extent to which the subjects of instruction are carried is, as a general rule, limited by the regulations for the officers' examination. As far, however, as the number of the instructors and the length of the course permit, practical applications of the instruction are to be carried out, in order to guard against superficial knowledge of the subjects dependent merely on the memory; *vivâ voce* examinations are to be employed, and written compositions to be practised, in order to secure a thorough comprehension of principles and reasons, in putting to a practical application the theoretical knowledge which has been acquired.

The principal subjects embraced under the course of tactics are :—

1. As an introduction to the subject, general considerations connected with military operations, material of war, the objects kept in view and the means employed in war, and the general organization of military forces.

2. The special principles of tactics; the disposition and march of troops, engagements, formations in line and column, close and open formations, distant and hand-to-hand fighting, the characteristics of the respective arms.

3. Cavalry, infantry, and artillery drill, according to the Prussian regulations.

4. The influence of formations of ground on the progress and results of an engagement, and upon the mode of employing troops; classification of the physical features of ground, and the reconnaissance of positions.

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5. Marches, including the preparations for a march, arrangements regarding quarters, discipline and regulations on the march, encamping, supplies and provisions, transport of troops by railway.

6. Duties connected with the security of armies on service and with the intelligence department; precautions to be adopted on the march; outpost duty; independent patrols and reconnaissances.

7. General principles connected with engagements; offensive and defensive actions, positions, disposition of troops for action; the general progress of an engagement; historical sketch of the development of tactics.

8. Circumstances peculiar to the action of the respective arms; line and light infantry; the employment of company columns, of riflemen, of infantry against cavalry and artillery, of cavalry against infantry and artillery, of field artillery; general considerations regarding the combination of the three arms, and the disposition of troops for battle.

9. Attack and defence of positions, heights, forests, villages, defiles, bridges, &c.; street fighting.

10. Minor operations of war.

The course of the science of arms comprehends generally:—

1. An introductory account of general principles connected with arms, their classification according to their objects and effects, the scope of the science connected with them, accompanied by a very concise summary of the history of arms.

2. The theory of gunpowder; its materials, manufacture, combustion, absolute and relative strength, proof, the conditions required in good powder, the causes of its deterioration, the means of detecting damaged powder, precautions to be taken in working with powder, its storage and transport. Other explosive compounds; fulminates, caps, friction tubes, gun cotton, &c.

3. Guns, waggons, and carriages for transport in the Prussian service; their classification according to the kinds of guns, calibre, and objects; their materials, mode of construction, preservation, and durability.

4. Ammunition of various kinds.

5. The theory of the motion of projectiles *in vacuo* and in the air; practical artillery, the different kinds of fire, their effects, respective employment of each for special objects in war.

6. The service and working of guns.

7. Small-arms and their ammunition, with special reference to construction, preservation, and practice with them.

8. Side-arms; their classification, manufacture, proof, &c.

The course of fortification embraces:—

1. An introductory account of the principles and objects of fortification, and the division of the subject.

2. Field fortification; earthworks, usual forms employed; ditches and obstacles, timber constructions, caponnières, *réduits*, strength of garrison required, and interior space.

3. The mode of constructing a field-work, labour and tools required, materials, time occupied in the construction.

4. Applications of field fortification; arrangements for the defence of works already constructed, and of situations favourable to a defending force, such as enclosures, houses, villages, &c.; method of fortifying defiles, heights, and bridge-heads; general considerations regarding the defence of positions; entrenched camps, defence of bridges.

5. The mode of attacking and defending a field-work.

6. Military communications on service, roads, railways, bridges, fords, &c.; their destruction and re-establishment. Construction of military

bridges, (*a*) with the materials carried with the army by the pontoon and light bridge train, (*b*) with materials found on the spot.

7. The laying out of camps; construction of huts, field-kitchens, wells, drinking troughs for horses, &c.

8. Permanent fortification; a short historical review of the growth of the science; elements of the science as developed in recent times; modern fortification illustrated by a brief account of the main features of the most celebrated systems, and a fuller account of the principles of the Prussian modern system.

9. Provisional fortification, and the features which distinguish it from field and permanent fortification.

10. The attack and defence of fortresses, with special reference to Vauban's system of regular attack; the duties of the individual arms in a siege, and their combined action.

The course of topography, surveying, and military drawing comprises :—

1. The elementary principles of topography, general considerations regarding the features of the surface of the earth, and the principal rules for judging of ground which may be derived from them; the importance in a military point of view of various forms of ground and their individual parts.

2. The theory of surveying; an acquaintance with the instruments ordinarily used for measuring distances and angles, the elementary operations of surveying, the measurement of altitudes, surveying of hills, and eye-sketching.

3. The theory of military drawing, explanation of its various objects; scales and reproduction of plans; construction of scales, elementary principles of projection, ground-plans, sections, profiles, hachures, contours, and the principles of hill-drawing on Lehmann's and Müffling's systems.

The course of instruction in military regulations and duties embraces :—

1. The organization of the Prussian army; the formation and strength both of the whole military force and of its component parts.

2. The system of recruiting, the regulations regarding universal liability to military service, the different ages of service, and the arrangements connected with raising the annual levies of recruits.

3. The composition of an army corps on a war footing, and the principles of its mobilisation.

4. Military legislation, the articles of war, the penal code for the army, regulations connected with discipline, courts of honour, constitution and method of procedure of courts-martial.

5. Interior economy of a company or squadron; battalion and regimental duties of officers.

6. Garrison duties.

The instruction in military correspondence includes :—

The general principles and requirements of military correspondence, the special regulations and points to be attended to in military official compositions of all sorts; the preparation of military notifications, reports, protocols, petitions, orders, &c., as well as of such letters on official subjects as may fall within the duties of a subaltern officer; and lastly, the preparation of returns and states, and of such military accounts as may devolve upon a subaltern officer placed in a position of independent command.

In each subject the students are to be made acquainted with the literature connected with it, and therefore a special course of instruction in military literature is omitted.

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In the practical course the exercises in tactics comprise :—

1. Accuracy and rapidity in judging of the features of ground, and of the suitability of positions for a given force of troops.

2. The illustration of the theoretical principles of tactical formations and movements, by attending parades and field-days of the troops on a large scale.

3. The execution of minor tactical operations on different kinds of ground, especially in reference to patrols, reconnaissance parties, the posting of sentries and outposts, the conduct of an advanced guard, a flanking party, a rear-guard, &c.

4. The execution of projects for the disposition of small detachments composed of the three arms on given ground, with a view to the occupation of positions, defiles, bridges, villages, &c., and the attack and defence of these positions on given conditions.

The practical exercises connected with the science of arms include :—

1. Attendance at the musketry and artillery practice of the troops.
2. The actual preparation of cartridges.
3. Musketry practice.
4. Visits to the artillery parade ground, in order to become acquainted with the drill and service of guns, the mode of packing ammunition, the construction of batteries, the employment and effects of different kinds of guns and projectiles, so far as a knowledge of these subjects is of practical importance to infantry and cavalry officers.
5. Visits to technical military establishments in the neighbourhood, such as a powder mill, a small-arms manufactory, a gun foundry, an artillery workshop, a laboratory, a powder magazine, an arsenal, and a carriage store.

The practical exercises in fortification include :—

1. Attendance at the operations carried on by the engineers in sapping, mining, field-works, and bridging.
2. Tracing and profiling field-works adapted to given ground, accompanied with calculations of the time and amount of labour necessary for the construction of the works, and the strength of garrison required for their occupation.
3. Visits to works of fortification in the neighbourhood.

The practical exercises in surveying comprise :—

1. Elementary practice with the plane-table, setting up the instrument and taking observations with it, triangulation, observation of forward and back angles, interpolation.
2. The survey of a village.
3. A contoured survey of hilly ground, the measurement of vertical angles and calculation of altitudes.
4. Levelling operations.
5. The survey of a tract of ground, chiefly with the plane-table and reflecting circle, and afterwards, in the case of the more expert students, merely by eye, to afford practice in eye-sketching.

During their residence at the War School, the ensigns and under-officers are formed into sections, according to the arms of the service to which they belong.

In order to keep up their acquaintance with practical military exercises, they are practised :—

1. In drill both with and without arms, according to the regulations prescribed in the drill-book.

2. In all formations and movements required for marches and engagements.
3. In giving words of command and instruction in drill.
4. In skeleton drill.

The drill of the ensigns of cavalry is to be confined to those movements on foot which are practised with recruits before commencing mounted drill, and are contained in the first part of the drill-book; only such exercises in the second part of the drill-book are to be practised as can be carried out with the number of students at the school. The drill of the ensigns of infantry is to comprise the exercises of both parts of the drill-book, and special attention is to be devoted to practice in skirmishing.

In the practical instruction in riding, especial care is to be taken that the infantry ensigns acquire a proper seat and confidence on horseback, and learn the management of a horse and the use of the aids. During the riding lessons the cavalry students are also to be exercised in the use of arms mounted, care being taken to avoid as much as possible distressing the horses.

Berlin, 21 July 1859. VON BONIN, Minister of War.

2.—EXTRACTS FROM THE INSTRUCTIONS REGARDING THE SYSTEM, SCOPE, AND SUBJECTS OF INSTRUCTION AT THE WAR SCHOOLS.

General objects of the schools.

The object of the War Schools is to afford the ensigns of all branches of the service, as well as such non-commissioned officers and privates as have already obtained the certificate of qualification for the rank of ensign, such a professional education, founded upon the general education acquired by them before their entrance into the service, as is necessary for passing the officers' examination, and for acquiring a practical acquaintance with the duties of a subaltern officer; the object is also at the same time to lay a sound foundation for further private study at a subsequent period.

The course has the twofold aim of affording a strictly scientific education, and of developing readiness in putting the theoretical knowledge acquired to a practical application. With the former object, the instruction must be founded upon the fundamental principles of science; with the latter object, it must aim at cultivating the power of rapidly forming conclusions based upon intelligent reasoning, and by this means producing an accuracy of judgment founded upon a clear comprehension of principles—the test of true intellectual culture—on which the connexion between theory and practice and between science and practical life depends.

The acquisition of the positive knowledge necessary for the immediate professional duties of a subaltern officer is undoubtedly an object of the greatest importance, which is to be looked for from the course of instruction at the War Schools. But it must be regarded as a still higher and more lasting advantage to stimulate the power of grasping principles, and to arouse that strength of reasoning and intellect which accompanies a young man throughout the whole of his subsequent career, and is of utility in all stages and phases of life.

In the system of education at the War Schools attention is to be paid to strengthening, and basing upon moral principles, the sentiments of patriotism, loyalty, magnanimity, and self-denial, by which an officer's duties towards his king and country can be fulfilled in a far higher sense than by a mere mechanical performance of routine duty.

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Although the intellectual aim of the education at the War Schools must necessarily be somewhat limited, owing to their more immediate object and the time and means at disposal, yet it is all the more important that the necessity should be recognized of laying a sure foundation and securing a starting point for the further intellectual culture of the young officer, and of arousing and strengthening in him that true love of science which is the indestructible characteristic of genuine education, but is never found with that superficial knowledge of which it is often difficult to say whether it is less injurious than actual ignorance.

It is consequently necessary at the schools to aim less at a number of subjects of instruction than at a clear and systematic arrangement of the knowledge acquired, and above all to develope abilities to the utmost, and to arouse to the greatest possible degree independence of thought, so that reflection may come to the assistance of memory, and that details which are forgotten with time may be easily worked out afresh by the exercise of the reasoning faculty; it should be the object to attain such readiness in employing reflection and applying the general principles acquired during the course of instruction, that a young man may be in a position to pursue the path upon which he has begun to tread, by his own unaided powers, without the guidance of his instructor.

General characteristics of the method of instruction to be employed.

The course of instruction at the War Schools consists exclusively of military subjects, and consequently of subjects which are entirely new to the young men who enter the schools, and for which their previously acquired knowledge affords only a purely general basis. A systematic and coherent method of instruction is consequently indispensable. But if the instruction were imparted merely in a general manner, in the form of academical lectures—if the instructor confined it simply to a long connected discourse, without paying the necessary attention to the personal abilities of his pupils, serious disadvantages would result. It would be impossible for the instructor to feel any well-grounded certainty that the knowledge imparted had really found an entrance into the mind of each of his listeners, that it had produced a clear comprehension of the subject, and had become really part and parcel of the student's intellect. General examinations afford but a very imperfect means of ascertaining the height of the mental barometer.

Attention cannot be paid to individual character when the method of instruction is confined merely to professorial lectures. Besides, the instructors are tempted to lower the system of education, to the prejudice of the abler students, and to hurry on the less able students too fast, in order to secure their passing the officers' examination. In such cases the higher object of strengthening the intellectual powers and of inculcating the desire for more perfect education is sacrificed. If students of unequal attainments, or without sufficient abilities, are merely put to listen to a regular professorial lecture, and carried forward from lesson to lesson without having their minds aroused, they may perhaps at the end of the course have with great difficulty impressed upon their memory some disconnected knowledge out of the various subjects of instruction; but so far as the main object of their residence at school is concerned, they will have gained nothing in comparison with the expenditure of time and means.

Detailed regulations regarding the method of instruction.

The method of instruction at the War Schools is to comprise, in connexion with the lectures, conversations on the subjects of the lectures, constant exercise of the mental abilities of the students, and practice in correctly expressing their thoughts both orally and in writing. The students are not merely to play a passive part during the delivery of the lectures, but are also to be required to take an active part in discussion of the subject; and the instructor must by questions and interchange of ideas with them make the students take an independent share in developing and working out the subject from its fundamental principles.

The personal influence of the instructor would be completely circumscribed, if the number of students in a class were too large, or if their attainments were unequal. The students at the War Schools are therefore to be distributed in parallel classes, in such a manner that, so far as the means at disposal permit, not more than 30 students at the utmost should be in the same class. Advantage is at the same time to be taken of this division into parallel classes to secure, as far as possible, equality in the general attainments of the students in the same class; so that the abler portion may not be kept back by the less able, and that, on the other hand, the whole system of instruction may not, for the sake of the latter, be confined to the lower limits which are necessary for them. With this object, before the commencement of the course, all the students are to be subjected to a preliminary examination, which is to embrace some of the general subjects of education prescribed for the ensigns' examination; and the object of which is to be to ascertain not so much the positive knowledge as the mental abilities of the young men.

The instruction at the War Schools is intended to afford the students the knowledge requisite for their professional duties, by means of a systematically arranged course, consisting of:—

Lectures.
Special lessons of revision and application.
Compositions to be written in private.
Practical exercises.

Lectures.

The instruction must commence in an elementary form, in order to lay a sure foundation. It is indispensable that the instructor should place himself in the position of the students, to whom these subjects of military science are entirely new, and who may in general be supposed to possess only average talents. But as soon as the simplest principles have been comprehended and the first foundation has thus been secured, the object of arousing the independent action of the students must be expressly kept in view in all the lectures, by giving a practical application to them. This object must be attained by taking care that the instruction is not confined to the mere delivery of a lecture, but is interrupted and enlivened by frequent questionings, in order to ascertain whether what has been heard has been really comprehended by the listeners. The answers will then afford further subjects for keeping alive the mental activity of the students, and of encouraging them to cultivate the exercise of original thought.

In these intellectual exercises a certain systematic order must be followed at first, until, after power and skill have been acquired, such a system becomes less essential. Beginning with practice of the memory, the instructor should, after a few previous questions, occasionally call upon the students to repeat orally some short theme, in which he must require logical arrangement and precision of language. Such repetitions, however, must not be a mere exercise of memory, and consequently the students must be required to reproduce the ideas in different words, so as to test, even in this instance, not their memory but their power of grasping principles, and of distinguishing between important and secondary questions. As soon as possible the instructor must proceed to require from the students short dissertations upon subjects selected from former lectures, which, however, must not be learnt by heart. Longer dissertations will be reserved for the lessons of application. In these exercises reflection is to be required, principles must be investigated and comprehended, causes and effects be distinguished, analogies be sought for, and retrospective summaries be made.

All dictation during the lectures is absolutely forbidden. Similarly, as a general rule, the students are not to be permitted to take down the lectures word for word. Nothing must be allowed to prevent their

giving their undivided attention to the lecturer, so that they may not lose a single link in the chain of his reasoning. The more free the student is from the use of the pen during the lectures, the more opportunity the instructor will have of calling his mind actively into play. Every instructor before the commencement of each section of his course is to prepare an outline of his lectures, giving a systematic statement of the general principles, dividing the subject into sections, and giving a brief account of the contents of each section; in this outline all technical expressions and the most important numerical data are to be included, in order to assist the memory of the students. This outline of the lectures will be lithographed and distributed to the students, so that by studying it beforehand they may be prepared for the subject of the coming lecture, and by a few remarks made in the lecture room may be able to produce complete notes of the lectures, filling up the gaps during their hours of private study.

Lessons of application.

The lessons of application are intended to ensure the success of the lectures. During them no special lectures are delivered by the instructor, but, on the other hand, exercises of all kinds are carried out, with the object of making the students thoroughly at home in, and enlarging their knowledge of, the subjects treated in the lecture room; with this object a brief review of the general principles of the subject to be treated is first to be given; exercises of varying difficulty in the practical application of the principles to numerous special cases are to be carried out; explanations are to be afforded, and the difficulties of individual students to be cleared up.

In the lessons of application opportunity is also to be afforded to the students of practice in extempore dissertations on the subjects which they have learnt or read. In these exercises especial importance is to be attached to correct language, logical arrangement, fluency, and military precision of expression. The opportunity must also be taken of representing from memory, on the black board, constructions connected with the military subjects of instruction, ground plans, profiles, tactical formations, &c.

In the last place, advantage is to be taken of the lessons of application to practise the students in writing essays within a fixed time upon set subjects. Readiness in composing written reports with rapidity and clearness is an indispensable qualification in a soldier.

As a special course of instruction in military literature cannot be carried out, owing to the limited time at disposal, and as the students are consequently to be made acquainted with the literature of each subject during the lectures in it, advantage should also be taken of the lessons of application, so far as time permits, to read select passages of important works, and to add explanations regarding them bearing upon the subjects treated in the lecture room.

In addition to all these exercises, which are capable of being enlarged upon by the intelligence and ability of the instructor, the lessons of application also afford opportunity, even during the theoretical course, for carrying out practical exercises; this admits of making the period subsequently devoted to the exclusively practical work somewhat limited.

Private study.

In order to secure thorough reflection upon the instruction which has been received, and preparation for further progress, private study strictly carried out during the whole of the course is indispensable. It may be expected from the intelligence and sense of honour of young men who have already attained the rank of ensign, and enjoy the independence corresponding to this rank, that it will be unnecessary to tie them down by compulsory regulations on this subject; it is to be hoped that their sense of duty and their own interest will induce them to take advantage of the time which is not actually occupied in instruction for

their further improvement. Consequently, although in order to secure uniformity it is necessary to lay down general rules for fixed hours of study, the students are not to be universally compelled to observe these specified hours. With those students, however, who do not justify the honourable confidence placed in them, the regulation regarding fixed hours for private study is to be put in force. Preparation for the lectures and lessons of application, and the written exercises connected with them, make the employment of some time in private study absolutely necessary.

For the performance of military duties presence of mind and rapidity and accuracy of judgment are also requisite, and these qualities must be developed by oral repetitions, questioning, practical applications, and especially by extempore dissertations.

Written compositions.

The subjects for the exercises to be written in private, in the preparation of which the students are at liberty to use all books of reference at their command, must be set in such a form as to call for originality of thought on the part of the students, and not mere compilation or copying from any book at hand.

In these written compositions on set subjects attention is to be paid not only to a cultivated style, to clearness and precision of expression and grammatical accuracy, but also to neatness, to carefully executed sketches, and to good handwriting, which at the present day is frequently neglected.

Practical exercises.

After the conclusion of the theoretical course, a limited period is specially devoted to practical exercises, which are intended to teach the application of the theoretical knowledge to professional purposes, and are consequently of the utmost importance. The instructor must conduct these exercises in such a manner that every student should take an actual part in them, and thus lay the foundation for the practical skill which is indispensable to the performance of his professional duties.

Examinations and marks.

In order to necessitate industry and independent study, and at the same time to afford a means of ascertaining the progress of the students, an examination essay is to be required every three months in each subject. This essay is to be set without notice being given beforehand; the subject is to refer to the matter of the lectures of the preceding quarter; it must not be too difficult for the attainments of the students, but above all things must not call for any particular exercise of memory. The essay is to be written in the lecture room, in the presence of the instructor and of one of the inspection officers. At the end of an hour the papers are to be collected, whether they are finished or not. These essays are looked through and marked by the instructor, and a record of the marks is preserved.

In the same way a public *vivâ voce* examination is to be held, which, however, is to be confined to merely two of the subjects studied during the preceding three months, but is to be of a searching character in these subjects. A record of the marks gained in these examinations is also kept.

At the end of each of the three quarters of the theoretical course, and also at the end of the practical course, a report book is to be sent round among all the instructors, in which a page is assigned to each pupil, divided into five columns, with the headings Ability, Attention, Industry, Progress, and Conduct. Each instructor is required to express, honestly and without partiality, his censure or approbation of the student in a few brief words in the first three columns, and in the fourth column is to state his opinion of his work in the form of a numerical predicate (marks). The director, after inquiry from the inspection officers, is to fill up the fifth column.

The marks so given are to be considered at a general meeting of the

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authorities, presided over by the director, in order that each instructor may be made acquainted with the opinions expressed by the other instructors regarding each student, and that an accurate and well-founded decision may be arrived at by general deliberation as to the marks to be assigned to the aggregate performances of each individual.

At the end of each of the above-mentioned periods of the course a report is publicly read out, in which the opinion passed upon every student in each separate subject, and also in regard to his general attainments, is announced. No names, however, are mentioned; each student is referred to under a number which he receives on his admission to the school, and which is known only to himself.

On the conclusion of the whole course the average of the three censures for the theoretical course, and of the single censure for the practical course, is copied into a general censure-list; and the director and all the instructors at a general meeting determine the final judgment to be passed upon the ability and industry of each student and upon his attainments in the several subjects of instruction; the question is also decided at the same time whether a student is qualified for admission to the officers' examination.

The final report upon the conduct of the students is decided upon by the director after communication with the inspection officers. In accordance with the decision upon all these various points certificates are made out stating whether the candidate is unconditionally qualified for admission to the officers' examination, whether conditions are to be attached to his admission to it, or whether he is unqualified.

Subjects of instruction.

The course of instruction embraces the four principal subjects of—

Science of arms,
Tactics,
Fortification,
Topography, surveying and military drawing,

to which are added the following additional subjects:—

Instruction in military duties,
Military correspondence,
Riding,
Fencing and gymnastics.

For each of the four principal subjects there are two instructors on the establishment of the school, each of whom has the charge of two parallel classes. Each establishment is consequently divided into four parallel classes. The instruction in gymnastics, &c., is entrusted to the officers, generally six in number, who are attached to the school for the purpose of exercising constant supervision over the students. If circumstances require, they are also to be called upon to assist in the theoretical instruction, particularly during the time of the practical exercises.

In accordance with the regulations which have been already stated the instruction is divided into two main parts, theory and exercises. The latter consist partly of lessons of application and partly of practical work. The lessons of application are carried on during the theoretical course, and consist of conversations and discussions, oral dissertations, and practice in the treatment of questions both *vivâ voce* and in writing.

The practical work consists partly of those exercises which are carried on out of the lecture room during the theoretical course and in immediate connexion with it, partly of those to which a special and independent course is devoted after the conclusion of the theoretical course.

The duration of the theoretical course is from the 1st of October to the middle of June of the following year, a period of eight months and a half. It embraces not only all the theoretical lectures, including the

exercises connected with them, the lessons of application, and a portion of the practical work, but in addition also all the gymnastic exercises.

The exclusively practical course extends from the middle of June to the end of July, and embraces consequently a period of a month and a half, which will be found sufficiently long when it is considered that a part of the practical work has been previously got through in connexion with the theoretical course.

The time available for the theoretical instruction, after making all deductions for holidays, is about 33 weeks. The instruction in the separate subjects is to be distributed over this period according to the respective importance of each; and the arrangement of time for the lectures, lessons of revision and application, and private study, is to be regulated accordingly. As far as is consistent with a systematic treatment of the various subjects, the number of hours of lectures should be kept low, so that a larger amount of time may be devoted to lessons of revision and application and to private study.

The following approximate distribution of time may serve as a general guide for the arrangement of the table of studies for a week :—

Science of arms	-	3 lectures,	2	lessons of application.	
Tactics	-	3	„	2	„ „
Fortification	-	3	„	2	„ „
Topography, and theory of surveying and drawing	-	2	„	2	„ „
Military drawing	-	4	„	0	„ „
Instruction in military regulations	-	1	„	1	„ „
Military correspondence	-	0	„	1	„ „
		16 lectures,		10 lessons of application.	

In regard to gymnastic instruction each student should on an average have :—

In riding	-	2 hours a week.
„ fencing	-	2 „
„ gymnastics	-	2 „

The time devoted to private study, for the purpose of mastering the instruction given in the lectures and for writing exercises, is to be taken out of the free time, and will be fixed by the director, due regard being paid to the time required for recreation.

The distribution of the subjects of instruction over the six days of the week is also left to the discretion of the director. But in all cases the lectures and gymnastic exercises should take place during the morning, the lessons of application in the afternoon, and the private study in the evening.

Theoretical course. Science of arms.

The lectures on the science of arms are to be supplemented :—

(*a.*) By illustration of the mode of testing the component parts of powder, different kinds of powder, metals, small-arms of all sorts, and ammunition.

(*b.*) By drawings and models.

(*c.*) By the inspection of guns and carriages of all kinds, and by visits to neighbouring military establishments and stores.

(*d.*) By practice in examining small-arms, taking them to pieces, putting them together, and cleaning them.

(*e.*) By practice in making cartridges.

(*f.*) By drill and musketry practice.

Tactics.

The lectures on tactics must afford a thorough acquaintance with elementary tactics and the action of the various arms, both singly and in

combination with each other. The instruction must be in close connexion with that given in military regulations, science of arms, fortification, and topography.

Military history must be considered as the main source of all knowledge of tactics. Consequently examples from history should be frequently quoted to illustrate principles, care being at the same time taken to remember that the instruction should be elementary, and not of too advanced a character. The students are to be particularly practised in answering with rapidity *vivâ voce* questions regarding the formations and movements of troops, so far as they fall within the province of a subaltern officer. The questions should refer to such subjects as simple dispositions of troops with reference to circumstances of ground, defence of posts, surprises, outposts, patrols, flanking parties, &c. The answers should be illustrated by drawings on the black board or on plans on a large scale. The great object of these *vivâ voce* examinations should be to cultivate readiness and quickness in forming conclusions. In the written compositions conciseness and precision of expression are to be most strictly enforced. No expressions are to be permitted in regard to the description of dispositions of troops, &c., which from their ambiguity might lead to mistakes on service. The compositions are to be written in the style and form of official reports. The different heads, such as the description of the ground, the arrangements for the disposition of troops, the narrative portion, &c., must be kept perfectly distinct from each other. Every report must be accompanied with a sketch of the ground; and all information on points which might influence military operations, such as the width and depth of watercourses, heights of hills, state of roads, &c., must be given.

When the course of instruction has advanced to the subject of applied tactics, reconnaissances on the ground are to be executed, and the students are to be practised in judging distances, and in noting all circumstances which affect both the general character of ground and the military value of positions. In connexion with these exercises reconnaissance reports and descriptions of ground are to be written from the hurried notes taken on the spot.

Military regulations.

The lectures on military regulations are intended to put together in a systematic and summary form the knowledge of military duties which is gradually acquired by the performance of company or squadron duty.

Fortification.

As it is only intended in the elementary instruction at the War Schools to give a general review of the wide subject of fortification, but at the same time, to ground the students thoroughly in the positive knowledge required for the performance of their professional duties, no more time than is absolutely necessary is to be spent upon the general and historical portion of the subject—*i.e.* the description of the various systems—in regard to which clear conceptions are not to be expected from beginners. The memory of the students is not to be unnecessarily burdened with details, and every subject is to be placed before them in the simplest possible form.

In field fortification, the section referring to communications is to be most thoroughly treated; for a subaltern officer may often be placed in positions in which he has to demolish or re-establish existing communications, such as bridges and roads of all sorts, and to render fords passable or impassable. In the exercises set to be written in private the subjects must be well defined, and not of such a general character as to be capable of being answered by copying common-places out of a book. Projects for the defence of small positions, houses, farms, the entrances and outskirts of villages, bridges, &c.—such as often occur on service—are especially recommended. Some of these sorts of exercises may also during the long days be carried out on the ground. Simplicity in all

arrangements is especially to be required; freedom of space and ease of egress for the garrison must be an indispensable condition in such projects.

In permanent fortification the theory of construction is not to be gone into, because the students are not likely to be called upon to design or execute such works. Nor are the characteristics of the various schools to be detailed, as in order to understand these correctly more profound knowledge and accurate judgment are required than can be expected from the students. The lectures must therefore be confined to an account of the simpler systems which have most frequently been employed in practice to the general principles of fortification, and the details of a plan of a fortress without reference to any particular system.

In the lectures on the attack and defence of places, the progress of a siege should be illustrated by some example from history in which the attack proceeded as far as possible in a regular form. Care should be taken that the students form a correct conception of the general *ensemble* of the operations; and a sketch should be given of the part played in a siege not only by infantry and cavalry, but also by the special arms, so that correct principles may be acquired and a foundation laid for further study of the subject.

The theoretical instruction is to be illustrated by appropriate examples from military history, and by models and plans of actually existing fortresses. The students are to be practised in calculating profiles, interior space, and the labour and tools required for the construction of field-works. Visits to the engineers' depôts and stores will afford opportunity of gaining acquaintance with tools and building materials, and an inspection of works of fortification will make the objects of the various parts of a fortress and their connexion with each other clearer.

Topography, &c.

An acquaintance with the general principles of topography is necessary as an introduction to the instruction in drawing and surveying. The students must be made acquainted with the features which have to be represented, and with the various characteristic forms of hilly ground, such as plateaus, ridges, watersheds, &c. Practice in drawing hachures and scales must also precede the attempt to represent ground. At the same time the instructors must carefully avoid attempting to enter upon the theory of geodesy or of military and physical geography, as the students are not equal to such advanced subjects; moreover, there is not time for treating these subjects thoroughly, and a superficial acquaintance with them would only lead to erroneous ideas. Instruction in the use of instruments employed in trigonometrical triangulation, or other advanced geodetical operations, is not to form part of the course. It is sufficient that the students should have only a very general acquaintance with those instruments which are not used for military purposes. On the other hand, thorough instruction is to be given in the construction and use of those instruments which are employed for ordinary military purposes. In regard to mathematical treatment of the subject, only such mathematical knowledge is to be required as is actually necessary for practical operations of surveying, such as the measurement of heights and laying down contours. Acquaintance with the general principles of plane trigonometry and the use of logarithm tables is to be exacted, but theoretical mathematics, which are not practically required, are not to be entered upon.

During the last weeks of the theoretical instruction in surveying, six or eight afternoons are to be devoted to some preliminary practical exercises, as a preparation for the more extensive surveying operations which are to follow. These exercises are to consist of the solution of problems in measuring inaccessible distances with simple appliances, in setting out straight lines, prolonging alignments, and the use of instruments. By

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sketching, in its more limited sense, is to be understood sketching a district by eye, pacing the distances without employing instruments. The students are not to be practised in this until they have acquired expertness in surveying with instruments.

To plan drawing four hours a week are as a general rule to be devoted; but as the students are likely to show very various degrees of expertness in this subject, those who are sufficiently advanced in it—as will generally be the case with the majority of those who have passed through the cadet corps—may be allowed to devote the time allotted to these lessons to other subjects.

Military correspondence.

The instruction in military correspondence is intended to comprise the principles of the subject and the requirements in connexion with it; the regulations to be observed in official writings of all kinds, and practise in the composition of all sorts of military reports, petitions, protocols, narratives, instructions, and private letters bearing on official subjects which come within the sphere of the duties of a subaltern officer. The preparation of returns and states, as also of those parts of accounts which may devolve upon a subaltern placed in a position of independent command, is also to be included in this course of instruction; while, on the other hand, the preparation of orders for the disposition of troops, and of tactical descriptions, comes under the course of instruction in tactics. Conciseness, precision, and correctness of expression are most strictly to be insisted upon, as well as exact compliance with the military forms of expression, and with the official regulations in regard to the mode of addressing officers of various ranks.

Riding.

The instruction in riding, which takes place during the theoretical course, is intended to give the infantry ensigns a good seat and confidence on horseback, and to teach them the proper mode of managing their horses and applying the aids. The cavalry ensigns, who from their previous instruction are sufficiently advanced not to require elementary riding lessons, are to be exercised in the use of arms mounted.

Gymnastics.

The instruction in gymnastics is to go into all the points which are demanded in the gymnastic instruction of the troops. The pupils are to be made acquainted with the principles on which the instruction is founded, so that they may be fitted to become instructors. They must be taught the reasons for the systematic development of the exercises, their dependence upon each other, their influence upon the whole muscular system, the mode of performing them, and the assistance required in them; during the latter period of the course they must be practised in giving instruction in the exercises.

Practical course.

After the theoretical course and the lessons of application in connexion with it have rendered the students capable of understanding and working out the instruction given during it, they enter upon that portion of the course in which practical work in connexion with the theoretical instruction previously given is carried out, partly in the country, partly on the exercise grounds of the troops. This portion of the course commences in the middle of June and terminates at the end of July.

Tactics.

In the practical exercises connected with the course of tactics the students are to be required to state orally on the ground the measures to be adopted, so that a military eye and rapidity in forming conclusions, as well as conciseness and correctness of expression, may be acquired. The students are to keep a journal showing how each day has been employed, in which they are to note not only what has been actually done, but also any mistakes which have been made, either by themselves or others, so as to show that they have reflected and reasoned upon what has taken place. The students are also required afterwards to write reports in the usual official form on the problems to which they have given *vivâ voce* answers on the ground; these reports are to be accom-

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panied by sketches showing the disposition of the troops supposed to be at disposal. When the circumstances of the garrison permit, small detachments of troops are to be employed at these exercises in order to illustrate them in a more vivid manner.

Surveying.

Besides the ordinary practical exercises in surveying, the more expert students are to be practised in sketching entirely by eye. In the preparatory exercises in surveying the scale of $\frac{1}{12500}$ may be employed; in the survey with the *Kippregel*, employing trigonometrical points, and in the exercises in field-sketching the scale of $\frac{1}{25000}$ is to be used. The students are to be distributed in these exercises in such a manner that not more than five should work at the same plane-table; and it will be advantageous that one of the more advanced students should be told off to each plane-table in order to encourage and assist the others. All the operations must be executed by the students themselves; the instructor is only to give them the necessary preliminary instruction, and to superintend the work, so that none of the students may remain unoccupied, and that anyone who is in difficulties may obtain the necessary assistance. The students are required to keep a journal of all the surveys and the work in connexion with them, and must every evening plot the measurements and observations made upon the ground during the day. All high ground is to be represented on the drawings by contours.

Moral supervision over the students.

Strict supervision is to be maintained over all the students in regard to irregularities in moral conduct, without, however, exercising excessive constraint over them, or placing unwise restrictions upon the independence of those who will shortly be officers. The best-conducted students are to be encouraged to exercise influence over the others; the *esprit de corps* which looks upon the honour of each individual as that of the whole body and the common property of all his comrades must be developed, and above all things the sentiment of military honour must be stimulated. The minds of the young men must be filled with reverence and affection for their colours; and remembering the glorious traditions of our royal house, of our army and of its individual parts, they must be incited to emulate the example set them. The recollection of the reputation and honour of each individual member of the army, the necessity of upholding by loyalty towards king and fatherland the individual fame of each regiment and the general fame of the service, must be perpetually kept before their minds. Religious sentiments resting upon internal conviction, and free from all hypocrisy and fanaticism, are to be awakened and kept alive in the hearts of all the students by means of regular attendance at religious worship on Sundays, in the same way as is ordered for the garrison of the place.

All ill-conducted and frivolously disposed students, after measures of punishment have been tried and failed with them, are without exception removed from the establishment, because they have shown themselves undeserving of the benefit of the instruction, and moreover cannot be permitted to remain, out of consideration to the better conducted. No allowance is on any account to be made for idleness.

Similar measures are to be adopted with those who are wanting in the ability necessary to enable them to follow the course of instruction. Anyone who is found unqualified for a residence at the establishment is to be sent back to his regiment at the very commencement of the course, in order not to keep back the others, and to allow the regiments to know those who are likely to be of no advantage to the army.

Powers of the director.

All the officers and students at the establishment are in matters of discipline subject to the director, who for this purpose is entrusted with the disciplinary powers of the commander of a regiment. Only such matters as involve a court-martial come under the cognizance of the commandant of the garrison. In such cases the director is to make the

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necessary application to the commandant, and to forward a report of the case and the result to the Inspector General of Military Education.

The director is charged with the duty of superintending the theoretical and practical instruction; he has to see that the programmes of the lectures and the examinations are in accordance with the general system of instruction prescribed, and are suited to the ability of the students. He is to convince himself whether the students have the previous culture and mental powers necessary to enable them to profit by the instruction. He must most stringently prevent the students being merely superficially crammed for passing the officers' examination, and must satisfy himself whether they are merely able to repeat and imitate what has been said and done before them, or whether they have made their knowledge part and parcel of their minds.

The director must be required not only to have an accurate acquaintance with the intellectual and moral qualities, the peculiarities of character, and the powers of each individual student, but also to form a proper estimate of the work done by every instructor in carrying out the regulations of the school and the higher objects of the instruction. He must therefore not only constantly attend the lectures and practical exercises, but must also subject to constant examination and supervision the exercises set by the instructors, the compositions written by the students, and the corrections of the instructors; he must bring his remarks to the notice of the instructors, and must keep up a constant intercourse and communication with them in order to enable him to exercise a salutary influence over the whole course of instruction.

APPENDIX N.

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TABLE I.—DISTRIBUTION of TIME during the WINTER PORTION of the THEORETICAL COURSE, 1868.

A.—*Theoretical Instruction.*

CLASS I.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8–9	Science of Arms.	Tactics.	Topography.	Military Regulations, &c.	Tactics.	Military Regulations, &c.
9–10	Plan Drawing.	Ditto.	Ditto.	Plan Drawing.	Fortification.	Science of Arms.
10–11	Ditto.	Military Correspondence.	Fortification.	Ditto.	Ditto.	Ditto.
4–6 (*Lessons of application.*)	Science of Arms.	Topography.	Tactics.	Fortification.	Theoretical Instruction in Drill.	—

CLASS II.

8–9	Military Regulations, &c.	Science of Arms.	Military Regulations, &c.	Fortification.	Military Correspondence.	Topography.
9–10	Fortification.	Plan Drawing.	Tactics.	Science of Arms.	Plan Drawing.	Tactics.
10–11	Ditto.	Ditto.	Topography.	Ditto.	Ditto.	Ditto.
4–6 (*Lessons of application.*)	Tactics.	Fortification.	Science of Arms.	Topography.	Theoretical Instruction in Drill.	

TABLE I.—DISTRIBUTION of TIME, &c.—*continued.*

CLASS III.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8–9	Fortification.	Tactics.	Topography.	Military Regulations, &c.	Science of Arms.	Military Regulations, &c.
9–10	Plan Drawing.	Ditto.	Ditto.	Plan Drawing.	Ditto.	Fortification.
10–11	Ditto.	Military Correspondence.	Science of Arms.	Ditto.	Tactics.	Ditto.
4–6 (*Lessons of application.*)	Fortification.	Topography.	Tactics.	Science of Arms.	Theoretical Instruction in Drill.	—

CLASS IV.

8–9	Military Regulations, &c.	Fortification.	Military Regulations, &c.	Science of Arms.	Topography.	Topography.
9–10	Science of Arms.	Plan Drawing.	Tactics.	Fortification.	Plan Drawing.	Tactics.
10–11	Ditto.	Ditto.	Military Correspondence.	Ditto.	Ditto.	Ditto.
4–6 *Lessons of (application.)*	Tactics.	Science of Arms.	Fortification.	Topography.	Theoretical Instruction in Drill.	—

TABLE I.—DISTRIBUTION of TIME, &c.—*continued.*

B.—*Practical Instruction.*

EXERCISE.	HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
Riding.	11.30—1.30, in 3 divisions.	1st, 3rd, and 6th Inspections.	2nd, 4th, and 5th Inspections.	1st, 3rd, and 6th Inspections.	2nd, 4th, and 5th Inspections.	1st, 3rd, and 6th Inspections.	2nd, 4th, and 5th Inspections.
Gymnastics and Fencing.	11.30—1.30, in 3 divisions.	2nd, 4th, and 5th Inspections.	1st, 3rd, and 6th Inspections.	2nd, 4th, and 5th Inspections.	1st, 3rd, and 6th Inspections.	2nd, 4th, and 5th Inspections.	1st, 3rd, and 6th Inspections.
Drill, &c.	3—4; 3—5 on Saturday.	Class I. Gun Drill.	Class IV. Gun Drill.	Class II., Gun Drill.	Class III., Gun Drill.	In 4 divisions. Aiming Drill.	Drill of the various arms; the Infantry in four divisions, Cavalry and Artillery by themselves.

The other practical exercises are specially ordered from time to time.

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TABLE II.—DISTRIBUTION of TIME during the SUMMER PORTION of the THEORETICAL COURSE, 1868.

A.—*Theoretical Instruction.*

CLASS I.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
7–8.40	Fortification.	Science of Arms.	Tactics (*Application*).	Fortification (*Application*).	Tactics.	Topography (*Application*).
8.50–9.40	Tactics.	Topography.	Military Correspondence.	Topography.	Science of Arms.	Fortification.
10–11.40	Plan Drawing.	Instruction in Military Regulations.	Plan Drawing.	Science of Arms (*Application*).	Special instruction for the Artillery and Engineers; gun drill and drill of the various arms as specially ordered.	

CLASS II.

7–8.40	Science of Arms.	Fortification (*Application*).	Fortification.	Tactics (*Application*).	Topography (*Application*).	Tactics.
8.50–9.40	Topography.	Tactics.	Topography.	Military Correspondence.	Fortification.	Science of Arms.
10–11.40	Instruction in Military Regulations.	Plan Drawing.	Science of Arms (*Application*).	Plan Drawing.	As for Class I.	

TABLE II.—DISTRIBUTION of TIME, &c.—*continued.*

CLASS III.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
7–8.40	Fortification.	Instruction in Military Regulations.	Tactics (*Application*).	Science of Arms.	Tactics.	Topography (*Application*).
8.50–9.40.	Tactics.	Topography.	Fortification.	Topography.	Science of Arms.	Military Correspondence.
10–11.40	Plan Drawing.	Science of Arms. (*Application*).	Plan Drawing.	Fortification (*Application*).	As for Class I.	

CLASS IV.

7–8.40	Instruction in Military Regulations.	Fortification.	Science of Arms.	Tactics (*Application*).	Topography (*Application*).	Tactics.
8.50–9.40	Topography.	Tactics.	Topography.	Fortification.	Military Correspondence.	Science of Arms.
10–11.40	Science of Arms (*Application*).	Plan Drawing.	Fortification (*Application*).	Plan Drawing.	As for Class I.	

TABLE II.—DISTRIBUTION of TIME, &c.—*continued.*

B.—*Practical Instruction.*

EXERCISE.	HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
Riding.	5–7 in the afternoon, in 3 divisions.	1st, 3rd, & 6th Inspections.	2nd, 4th, & 5th Inspections.	1st, 3rd, & 6th Inspections.	2nd, 4th, & 5th Inspections.	1st, 3rd, & 6th Inspections.	2nd, 4th, & 5th Inspections.
Gymnastics and Fencing.		2nd, 4th, & 5th Inspections.	1st, 3rd, & 6th Inspections.	2nd, 4th, & 5th Inspections.	1st, 3rd, & 6th Inspections.	2nd, 4th, & 5th Inspections.	1st, 3rd, & 6th Inspections.

The other practical exercises are specially ordered from time to time.

WAR SCHOOL AT HANOVER.

TABLE III.—DISTRIBUTION of TIME during the PRACTICAL COURSE, 1868.

Date.	CLASS I.		CLASS II.	
	Morning.	Afternoon.	Morning.	Afternoon.
Sept. 14	Surveying.	Topography.	Musketry practice.	Tactics.
15	Musketry practice.	Tactics.	Surveying.	Topography.
16	Surveying.	Topography.	Musketry practice.	Fortification.
17	Musketry practice.	Fortification.	Surveying.	Topography.
18	Surveying.	Science of Arms.	Musketry practice.	Tactics.
19	Musketry practice.	Tactics.	Surveying.	Science of Arms.
20	Sunday.		Sunday.	
21	Surveying.	Science of Arms.	Fortification (on horseback).	Fortification.
22	Fortification (on horseback).	Fortification.	Surveying.	Tactics.
23	Surveying.	Topography.	Fortification (on horseback).	Fortification.
24	Fortification (on horseback).	Fortification.	Surveying.	Topography.
25	Surveying.	Tactics.	Fortification (on horseback).	Fortification.
26	Fortification (on horseback).	Fortification.	Surveying.	Science of Arms.
27	Sunday.		Sunday.	
28	Surveying.	Science of Arms.	Tactics (on horseback).	Tactics.
29	Tactics (on horseback).	Tactics.	Surveying.	Topography.
30	Surveying.	Topography.	Tactics (on horseback).	Tactics.
Oct. 1	Science of Arms.	Science of Arms.	Surveying.	Fortification.
2	Surveying.	Fortification.	Science of Arms.	Science of Arms.
3	Tactics (on horseback).	Officers' Musketry practice.	Surveying.	Officers' Musketry practice.
4	Sunday.		Sunday.	
5	Surveying.	Topography.	Surveying (eye-sketching).	Fortification.
6	Tactics (on horseback).	Tactics.	Surveying.	Topography.
7	Surveying.	Science of Arms.	Tactics (on horseback).	Tactics.
8	Musketry practice.	Fortification.	Musketry practice.	Science of Arms.
9	Musketry practice.	Cleaning Arms.	Musketry practice.	Tactics.
10	Musketry practice.	Tactics.	Musketry practice.	Cleaning Arms.
11	Sunday.		Sunday.	
12	Tactical exercises, mounted, for all four classes.			
13				
14				

APPENDIX N.

War School at Hanover.

TABLE III.—DISTRIBUTION of TIME, &c.—*continued.*

Date.	CLASS III.		CLASS IV.	
	Morning.	Afternoon.	Morning.	Afternoon.
Sept. 14	Surveying.	Topography.	Fortification (on horseback).	Fortification.
15	Fortification (on horseback).	Fortification.	Surveying.	Topography.
16	Surveying.	Topography.	Fortification (on horseback).	Fortification.
17	Fortification (on horseback).	Fortification.	Surveying.	Topography.
18	Surveying.	Tactics.	Fortification (on horseback).	Fortification.
19	Fortification (on horseback).	Fortification.	Surveying.	Tactics.
20	Sunday.		Sunday.	
21	Surveying.	Science of Arms.	Musketry practice.	Fortification.
22	Musketry practice.	Tactics.	Surveying.	Science of Arms.
23	Surveying.	Topography.	Musketry practice.	Tactics.
24	Musketry practice.	Fortification.	Surveying.	Topography.
25	Surveying.	Science of Arms.	Musketry practice.	Tactics.
26	Musketry practice.	Tactics.	Surveying.	Science of Arms.
27	Sunday.		Sunday.	
28	Surveying.	Topography.	Musketry practice.	Fortification.
29	Musketry practice.	Cleaning Arms.	Surveying.	Topography.
30	Surveying.	Fortification.	Musketry practice.	Cleaning Arms.
Oct. 1	Science of Arms.	Science of Arms.	Surveying.	Topography.
2	Surveying.	Topography.	Science of Arms.	Science of Arms.
3	Musketry practice.	Officers' Musketry practice.	Surveying.	Officers' Musketry practice.
4	Sunday.		Sunday.	
5	Surveying.	Tactics.	Surveying (eye-sketching).	Science of Arms.
6	Musketry practice.	Science of Arms.	Surveying.	Topography.
7	Surveying.	Topography.	Musketry practice.	Tactics.
8	Tactics (on horseback).	Tactics.	Combined with Class III.	
9	Tactics (on horseback).	Tactics.		
10	Tactics (on horseback).	Tactics.		
11	Sunday.		Sunday.	
12	Tactical exercises, mounted, for all four classes.			
13				
14				

In addition to the exercises enumerated in the above Table, the students went for five days to the fortress of Minden for practical instruction in fortification and artillery.

APPENDIX O.

PRUSSIAN WAR SCHOOLS.

1.—CENSURE-LIST, illustrating the SYSTEM on which the QUARTERLY CENSURES, or MARKS, are awarded to each STUDENT, and his final CENSURE determined from them.

A.B.

Ensign in the Regiment.

—		1st Quarter.		2nd Quarter.		3rd Quarter.		Practical Course.		Final predicate.
Tactics and Military Regulations.	Abilities	*Tolerably good.*	Numerical predicate.	*Tolerably good.*	Numerical predicate.	*Tolerably good.*	Numerical predicate.	*Good.*	Numerical predicate.	Decided at a conference of the Director and all the Instructors.
	Attention	*Good.*		*Good.*		*Very good.*		*Very good.*		
	Industry	*Good.*		*Very good.*		*Very good.*		*Very good.*		
	Progress	*Satisfactory.*	5	*Tolerably good.*	6	*Good.*	7	*Very good.*	8	6½
Science of Arms.	Abilities	*Tolerably good.*		*Tolerably good.*		*Tolerably good.*		*Tolerably good.*		
	Attention	*Tolerably good.*		*Tolerably good.*		*Good.*		*Good.*		
	Industry	*Satisfactory.*		*Tolerably good.*		*Tolerably good.*		*Good.*		
	Progress	*Satisfactory.*	5	*Satisfactory.*	5	*Tolerably good.*	6	*Tolerably good.*	6	5½
Fortification.	Abilities	*Satisfactory.*		*Satisfactory.*		*Satisfactory.*		*Tolerably good.*		
	Attention	*Tolerably good.*		*Tolerably good.*		*Tolerably good.*		*Good.*		
	Industry	*Tolerably good.*		*Satisfactory.*		*Tolerably good.*		*Good.*		
	Progress	*Satisfactory.*	5	*Satisfactory.*	5	*Tolerably good.*	6	*Good.*	7	5¾
Military Correspondence.	Abilities	*Good.*		*Good.*		*Good.*		*Good.*		
	Attention	*Good.*		*Good.*		*Good.*		*Good.*		
	Industry	*Good.*		*Good.*		*Good.*		*Good.*		
	Progress	*Good.*	7	*Good.*	7	*Good.*	7	*Good.*	7	7
Topography and Surveying.	Abilities	*Good.*		*Good.*		*Good.*		*Very good.*		
	Attention	*Good.*		*Good.*		*Very good.*		*Very good.*		
	Industry	*Tolerably good.*		*Good.*		*Very good.*		*Good.*		
	Progress	*Tolerably good.*	6	*Good.*	7	*Very good.*	8	*Good.*	7	7
Military Drawing.	Abilities	*Very good.*		*Very good.*		*Very good.*		*Very good.*		
	Progress	*Very good.*	8	*Very good.*	8	*Very good.*	8	*Very good.*	8	8
Total value of predicates.		*Satisfactory.*	117	*Satisfactory.*	125	*Tolerably good.*	142	*Good.*	148	7
Gymnastics.	Abilities	*Good.*		*Good.*		*Good.*		—		—
	Progress	*Good.*		*Good.*		*Good.*				
Fencing.	Abilities	*Good.*		*Good.*		*Good.*		—		—
	Progress	*Tolerably good.*		*Good.*		*Good.*				
Riding.	Abilities	*Satisfactory.*		*Satisfactory.*		*Satisfactory.*		—		—
	Progress	*Tolerably good.*		*Satisfactory.*		*Tolerably good.*				
Drill.	Abilities	*Very good.*		*Very good.*		*Very good.*		—		—
	Progress	*Very good.*		*Very good.*		*Very good.*				
Musketry practice.	Abilities	—		—		—		*Good.*		—
	Progress	—		—		—		*Good.*		
Instruction drill.	Abilities	*Good.*		*Good.*		*Good.*		—		—
	Progress	*Good.*		*Very good.*		*Excellent.*				
General Conduct.		*Very good.*		*Very good.*		*Very good.*		*Very good.*		—

N.B. The words and numbers printed in italics in the above list are filled in in writing.

PRUSSIAN WAR SCHOOLS.

2.—TABLE showing the FORM in which the RESULTS of the FINAL EXAMINATION are drawn up for each STUDENT by the BOARD composed of the EXAMINERS and the AUTHORITIES of the SCHOOL.

Name, Regiment, Age, &c., of the Candidates.	Results of the Examination.																								Decision in regard to			Decision in regard to			Final Result of the Examination.	Decision of the Board.	Remarks showing whether a Candidate is entitled to a Certificate of Fitness for a Commission immediately or not.
	Science of Arms.				Tactics.				Fortification.				Military Regulations and Correspondence.				Surveying.				Military Drawing.														
	Opinion of the Instructor.	Written Examination.	Viva voce.	Result.	Opinion of the Instructor.	Written Examination.	Viva voce.	Result.	Opinion of the Instructor.	Written Examination.	Viva voce.	Result.	Opinion of the Instructor.	Written Examination.	Viva voce.	Result.	Opinion of the Instructor.	Written Examination.	Viva voce.	Result.	Opinion of the Instructor.	Paper Work.	Result.	Gymnastics, &c.	Riding.	Personal Qualities.	Diligence.	Conduct.						

3.—SPECIMEN of the FINAL CERTIFICATE given to the STUDENTS on leaving a WAR SCHOOL.

LEAVING CERTIFICATE

FROM THE ROYAL WAR SCHOOL AT HANOVER

for

Ensign *A.B.* of the Regiment.

Ensign *A.B.* has attended the course from the 1st October 1867 to the 31st July 1868, and has passed the Officers' Examination with the general predicate *Satisfactory*.

Application is not to be made by the Commanding Officer of the Regiment to the Supreme Examination Commission for Ensign A.B.'s certificate of fitness for a commission, until the latter has proved himself to possess the necessary degree of strength of character.

In the practical subjects of instruction he obtained the following predicates:—

Gymnastics	*good.*
Fencing	*very good.*
Riding	*satisfactory.*
Drill	*very good.*
Musketry practice	*very good.*
Instruction in duty	*satisfactory.*

Abilities: *Ensign A.B. has very good natural endowments, and also has a good general education, but owing to want of application has not made the most of his abilities. His physical qualifications are very good.*

Industry: *generally satisfactory, but still at times not sufficiently steady, and requiring the application of a stimulus.*

Conduct: *Ensign A.B. has always shown gentlemanly manners, irreproachable moral conduct, and tact; but his personal character is not yet sufficiently developed, and he consequently requires guidance in this respect.*

THE DIRECTOR OF THE WAR SCHOOL.

Hanover, 31st July 1868.

The punishments which have been inflicted upon Ensign A.B. are:—

(1.) *Two days' open arrest, for neglect of duty in not sending in until the afternoon a written exercise which was due in the morning.*

(2.) *Three days' close arrest, for repeated neglect of duty in being still in bed five minutes after the signal for getting up.*

N.B.—The parts of the certificate printed in italics are filled up in writing by the director of the school.

APPENDIX P.

UNITED ARTILLERY AND ENGINEER SCHOOL, BERLIN.

TABLE I.—ARRANGEMENT of LECTURES for the FIRST YEAR'S STUDENTS—SESSION of 1868–9.

Days.	Hours.	LOWER CŒTUS. 1st Division (Artillery).	2nd Division (Artillery).	3rd Division (Engineers).
MONDAY.	8–9	—	Engineering Science.	Mathematics.
	9–10	Artillery.	Ditto.	Ditto.
	10–11	Ditto.	Artillery.	Architectural Drawing.
	11–12	Tactics.	Ditto.	Ditto.
	12–1	Ditto.	—	Physics.
	1–2	—	—	Ditto.
TUESDAY.	8–9	—	—	French.
	9–10	Engineering Science.	Artillery.	Engineering Science.
	10–11	Ditto.	Ditto.	Plan Drawing.
	11–12	Mathematics.	Mathematics.	Ditto.
	12–1	Chemistry.		Landscape Drawing.
	1–2	—	—	Ditto.
	4–6	Veterinary Science.		—
WEDNESDAY.	8–9	Physics.	—	Mathematics.
	9–10	Military Drawing.	Physics.	Ditto.
	10–11	Mathematics.	Ditto.	Artillery.
	11–12	Ditto.	Tactics.	Ditto.
	12–1	Tactics.	Mathematics.	Fortification Drawing.
	1–2	—	Ditto.	Ditto.
	4–6	—	—	Advanced Mathematics.

Days.	Hours.	LOWER CŒTUS. 1st Division (Artillery).	2nd Division (Artillery).	3rd Division (Engineers).
THURSDAY.	8–9	Chemistry.		Mathematics.
	9–10	Ditto.		Ditto.
	10–11	Military Drawing.	Tactics.	Tactics.
	11–12	Ditto.	Ditto.	Ditto.
	12–1	Artillery.	Artillery.	Physics.
	1–2	Ditto.	Ditto.	Ditto.
FRIDAY.	8–9	Artillery.	—	Mathematics.
	9–10	Ditto.	Engineering Science.	Ditto.
	10–11	Engineering Science.	Military Drawing.	Theory of Surveying.
	11–12	Mathematics.	Ditto.	Engineering Science.
	12–1	Ditto.	Mathematics.	Ditto.
	1–2	—	Ditto.	—
SATURDAY.	8–9	Physics.	Artillery.	French.
	9–10	Ditto.	Ditto.	Engineering Science.
	10–11	Mathematics.	Physics.	Ditto.
	11–12	Ditto.	Military Drawing.	Tactics.
	12–1	Artillery,	Mathematics.	Fortification Drawing.
	1–2	Ditto.	Ditto.	Ditto.

TABLE II.—ARRANGEMENT of LECTURES for the SECOND YEAR'S STUDENTS—SESSION of 1868-9.

Days.	Hours.	Upper Cœtus. 1st, 2d, 3d, 4th, and 5th Divisions (Artillery).	Upper Cœtus. 6th Division (Engineers).
Monday.	8-9	Chemistry.	Hydraulic Construction.
	9-10	Ditto.	Ditto.
	10-11	Mathematics.	Mathematics.
	11-12	Ditto.	Ditto.
	12-1	—	Architectural Drawing.
	1-2	—	Ditto.
Tuesday.	8-9	—	Riding.
	9-10	Artillery.	Engineering Science.
	10-11	Ditto.	Ditto.
	11-12	Military History.	Mathematics.
	12-1	Ditto.	Ditto.
	1-2	—	Riding.
	3-5	French.	
Wednesday.	89	Veterinary Science.	Engineering Science.
	9-10	Ditto.	Ditto.
	10-11	Artillery Drawing.	Fortification Drawing.
	11-12	Ditto.	Ditto.
	12-1	—	Chemistry.
	1-2	—	Ditto.
Thursday.	8-9	—	Riding,
	9-10	Artillery.	Engineering Science.
	10-11	Ditto.	Ditto.
	11-12	Mathematics.	Mathematics.
	12-1	Ditto.	Ditto.
	1-2	—	Riding.
	4-6	Advanced Mathematics.	
Friday.	8-9	—	Riding.
	9-10	—	Engineering Science.
	10-11	Artillery.	Ditto.
	11-12	Ditto.	Plan Drawing.
	12-1	Chemistry.	Ditto.
	1-2	—	Riding.
	4-6	Advanced Mathematics.	
Saturday.	8-9	—	Engineering Science.
	9-10	Artillery Drawing.	Ditto.
	10-11	Ditto.	Fortification Drawing.
	11-12	Mathematics.	Ditto.
	12-1	Ditto.	Chemistry.
	1-2	—	Ditto.

N.B.—The arrangement of studies given for the Artillery in the Upper Cœtus is that in operation under the old system, by which all Artillery students were retained two years at the school. The ordinary course for the Artillery will in future be that given for those of the Lower Cœtus.

APPENDIX Q.

War Academy, Berlin.

APPENDIX Q.

PRUSSIAN WAR ACADEMY.

1.—Translation of an Account of the Prussian War Academy, communicated by Lieutenant-General von Etzel, Director of the Academy.

1.—*Object of the Institution.*

The general object of the War Academy, which bears the character of a *Military University*, is to raise the scientific spirit of the army; its special object is to afford to the most able officers of all arms, after they have served for at least three years as officers, and have given proof of practical ability, such an education as will fit them for posts of high command; for appointments as staff officers; as instructors in the military educational establishments; and for all other kinds of duty which require scientific attainments of a superior order, both in military and general subjects.

2.—*General Arrangements.*

The course of instruction extends over three years, and is divided into three consecutive classes (*Cœtus*), lasting from the 1st of October of each year to the 1st July of the following year. The accommodation and means of instruction at present allow of 163 officers being admitted to the course. This number cannot in the meantime be exceeded, and is the largest which as yet has been received. The increase in the number of admissions has been occasioned both by the augmentation of the officers of the army, and the more satisfactory results of the examinations. Upon the return of a settled state of peace, the enlargement of the academy by the creation of parallel classes will be brought under consideration. During the months of July, August, and September of every year, the officers attending the academy return to do duty with their regiments. In July practical exercises take place in the 2d and 3d Cœtus.

Only such officers as have distinguished themselves during the three years' course by diligence, ability, quickness of perception, strength of character, &c., will, after quitting the academy, be attached for a length of time to the other arms, to acquire a practical acquaintance with their duties.

3.—*Staff of Establishment.*

The War Academy is under the general superintendence of the Inspector General of Military Education.

4.—*The Special Governing Bodies consist of:*—

1. The Direction.
2. The Board of Studies.

5. The Direction is composed of a Lieutenant-General as Director, who conducts all official business and correspondence, one or two Staff Officers as members of the Direction, and an Adjutant; the latter is assisted in the financial business by a paymaster.

6. The position occupied by the Director towards the other members of the Direction, and towards the officer students, is that of their immediate commanding officer. He has the entire management of the discipline and financial business of the establishment, and is curator of the treasury,

The member or members of the Direction regulate the attendance at studies, and are specially charged with the superintendence of discipline during the lectures.

The adjutant attends to the office business, in which he is assisted by a clerk.

The paymaster manages the financial business of the institution, a member of the Direction and the adjutant being also members of the finance committee.

Quarters are provided in the building of the academy for all the members of the Direction, and also for the librarian and for the professor of physics, as curator of the museum of physical science.

7. The Board of Studies, of which the Director is *ex officio* president, is composed, firstly, of three officers of high rank and scientific attainments, one of whom must belong to the artillery or engineers, and secondly, of two civilians of Berlin, men of learning and practical experience in education, and of established reputation for scientific attainments.

The Board of Studies has also a secretary and a librarian.

8. The Board of Studies is entrusted with the superintendence—

(1.) Of the systematic carrying out of the course of instruction, in accordance with the spirit of the regulations issued. For this purpose the different subjects of instruction are apportioned among the members of the board.

(2.) Of the capabilities of the instructors, of which they are required to judge by frequent visits to the lectures.

(3.) Of the diligence and progress of the students.

(4.) Of the general state of the institution, as shown by the results of the instruction; and,

(5.) Of the scientific collections (the library, collections of plans and models, physical and chemical apparatus, &c.)

9. The Board of Studies selects the instructors to be employed, and proposes them to the higher authorities for appointment.

It provides the instructors with the necessary instructions, and arranges the course of study each year, in accordance with the general plan of instruction, and with reference to the wishes of the instructors.

10. The Board of Studies each year sets the questions for the examination for admission to the institution, looks over the papers which are sent in, and decides upon those officers who are found to be duly qualified for admission.

In order to prevent undue extension of the field of study for the candidates, a programme is drawn up and published by the Board of Studies in the course of the winter, announcing the various subjects in which questions will be set.

A programme and examination questions are appended.*

The questions are answered in writing by all the candidates on the same days and within the same time, in presence of a board appointed by the generals commanding the respective army corps, and presided over by the chief of the staff. This board makes a preliminary report upon the answers, in which it is also at liberty to specify the military qualifications of the candidates.

The number of officers who offer themselves for the examination of course varies very much in the different army corps and regiments. The average number of candidates has hitherto been 100, but an increase in this number is to be expected on the return of a more settled state of affairs.

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* See page 577.

APPENDIX Q.

War Academy, Berlin.

The object of the examination is to ascertain whether the candidates have made further progress in scientific instruction since the examinations for the rank of ensign and officer, or at least have obtained such an amount of general education and positive knowledge as are requisite in order to pursue with success and profit the course of instruction at the War Academy.

The subjects from which the questions in mathematics are taken are in general the same as in the ensigns' examination; but in setting the questions their practical use is, as far as possible, to be kept in view, so that the candidate may be reminded at the examination that it is of less importance to solve difficult and complicated formulæ than to apply with readiness and judgment the principles he has already acquired, especially to cases which are connected with his professional duties, or are of practical utility.

The questions in history are not merely to call the memory into requisition, but to be such as, while demanding accurate and profound knowledge of history and geography, oblige the candidates also to display their power of grasping principles and of reflection, and to give proof of general cultivation of the mind.

The questions in fortification, in the science of arms, and in military surveying are not to exceed the requirements demanded in the officers' examination; but the candidate will be required in his answers to show not merely his positive knowledge but his mental power.

The questions in tactics are as far as possible limited to practical cases, not extending beyond the duties of a subaltern officer, in which those of a captain are included, as every lieutenant must at all times be prepared to act as a substitute for a captain. Questions connected with mixed detachments of all arms, such as might fall within the duties of adjutants* to commanding officers of subordinate rank on active service, may also be given.

As an experimental arrangement, candidates are at present allowed, on stating the sources of information employed, to send in before the examination other compositions written by themselves in private on questions connected with the non-military subjects of examination, in order to afford a means of judging of their abilities and industry. These compositions may to a certain extent be taken into consideration in determining the results of the examination.

A candidate can be admitted to the academy only when all his answers are marked at least as "satisfactory."

11. The Board of Studies is further entrusted with the revision of the judgments which the instructors have passed upon the yearly examination exercises of the students.

At the end of the course in the first and second Cœtus the officers write an essay in each branch of study on a subject which they select from several that are proposed.

These essays are written in the lecture room without any assistance beyond the notes taken at lecture, of which, however, no *direct* use is permitted after the subject is fully understood. Five hours is the maximum time allowed for each essay.

For the officers of the third Cœtus, on the other hand, subjects for essays in each branch of instruction are set in the course of the winter, from which one may be selected, to be worked during the term in private, with full liberty to use every source of information.

At the end of the three years' course the Board of Studies, in concert with the Director, settle the final certificates of the officer students. In these certificates the Board of Studies speak to the scientific attainments,

* Corresponding nearly to Brigade-Majors.

the Director to the character and conduct of the officers. At the same time the most promising officers are recommended for employment for a period of 10 months with the other arms of the service.

12. Once every year a report upon the general state of the institution is prepared jointly by the Director and the Board of Studies, and forwarded to the Inspector General for the purpose of being laid before the King. In this report the names of those officers are mentioned who by their distinguished performances have rendered themselves deserving of the distinction of the expression of His Majesty's approbation. Such cases occur very rarely.

13. The instructors are selected from officers of rank who have received a scientific education (preference being given to those of the General Staff), and from the professors of the University of Berlin. Their remuneration is proportionate to the number of weekly lectures they deliver, 100 thalers a year being the amount for each weekly lecture. It is only those professors for the preparation of whose lectures less time is required that receive a somewhat lower rate of remuneration.

It is in contemplation to organize a special corps of military instructors for the academy—in which the officers will remain from four to six years—in order to avoid the frequent change of instructors. On the expiration of this period they will return to their regiments.

14. The officers at the academy are under the immediate authority of the Director.

The conditions of admission to the entrance examination are—constitutional strength and sound health, firmness of character and trustworthy conduct, freedom from pecuniary difficulties, a service of at least three years as officers, and a thorough acquaintance with practical duty Except on grounds of a strong personal nature, or connected with duty, no officer who wishes to present himself can be either entirely excluded from the competitive examination for admission, or even have his claim deferred.

15. Although the complete course extends over three years, the period for which officers are attached to the academy lasts only for the first Cœtus. On the expiration of this period the Director, conjointly with the Board of Studies, is required to designate by name those officers who have proved themselves worthy of remaining at the institution.

16. Each individual receives orders to rejoin the academy every year. In order to make the necessary recommendations for this purpose the Board of Studies assembles at the conclusion of the annual course, and reports to the Director upon the officers, in accordance with the result of the examinations and the opinion passed upon them.

17. The result of the examinations is decided in the first instance by the instructors, subject to the control of the Board of Studies. The judgment is formed from the written compositions of the officers, by assigning to them predicates according to the fixed scale. The instructors, however, are required to state the grounds of their selection of the officers in a special list, and to classify the students, as far as possible, according to their peculiar abilities. The compositions, after being corrected by the instructors and marked with the predicates of which they are thought deserving, are returned to the officers. No one is permitted to see the list of marks itself.

18. For each year of the instruction received at the academy the officers are obliged to serve two years in the army.

19. All other regulations in regard to the officer students are contained in special instructions which only relate to matters of duty. The instructions issued by the Inspector General of Military Education, dated 22nd March 1868, which can be purchased, contain the regulations relating to the extent and course of instruction at the academy.

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20. *Instruction.*

No particular text books are prescribed; the method of instruction is in general by professorial lectures, excepting in mathematics, in which one half of the time of study is devoted to application lessons. In addition to this the instructors in the military subjects are required, during their course of lectures, to set subjects for essays as exercises for the students, to be written within a limited time. These essays are to be on subjects of practical importance.

Practical instruction in surveying and field-sketching is given during the month of July to the officers of the second Cœtus.

An expedition for practice in staff duty is similarly made during the same month in the third Cœtus; during this expedition instruction and practice are afforded in all the duties which staff officers are called upon to perform on active service.

During the course of instruction the officers are taken under charge of the respective instructors to visit the various military manufacturing establishments and places of exercise of the troops.

As auxiliaries to the course of instruction, the academy contains a good library, a rich cabinet of physical science, a chemical laboratory, and a collection of scientific apparatus and models.

The course of instruction for the officer students is partly obligatory, partly voluntary.

The obligatory subjects comprise:—

1. Tactics.
2. Science of arms.
3. Fortification.
4. History of the art of war.
5. Military administration.
6. Military sanitary science.
7. Military geography.
8. Staff duty.
9. Military history.
10. Surveying.
11. Mathematics (only in the first Cœtus).

The voluntary subjects comprise:—

1. Mathematics in the second and third Cœtus.
2. Geodesy.
3. History.
4. General geography.
5. Physical geography.
6. Physical science.
7. Chemistry.
8. History of literature.
9. History of philosophy.
10. French.
11. Russian.

In English, instruction at the academy is only given by private arrangement. The Director, however, affords every facility for it in regard to accommodation.

The officer students are obliged to attend at least 20 lectures a week.

Four weeks after the commencement of the lectures the officers are required to declare the choice they make of the voluntary subjects of study, and they are not permitted afterwards to alter their selection. The intention of this arrangement is to encourage the cultivation of *spécialités*.

Although it is not considered possible that the students should devote themselves with equal and sufficient industry in private to all or to the majority of the non-military subjects, yet it is not wished to prevent anyone from attending all the lectures, and attendance at lectures in the voluntary subjects is therefore exceptionally permitted without the necessity of subsequently passing an examination in them.

2.—Programme of the Entrance Examination.

Programme of the Subjects in which Officers who are Candidates for admission to the War Academy in the year 1868 *must be prepared to be examined.*

In conformity with a Cabinet Order of the 3rd December 1825 the examinations for admission to the War Academy are to be conducted in the presence of a board assembled for that purpose in each military district.

The subjects of the various questions to be answered by each candidate in the year 1868 are in general as follows :—

1. Mathematical subjects :—
   - (*a.*) A question in algebra.
   - (*a.*) A question in geometry.
2. Historical subjects :—
   - (*a.*) A question in ancient history.
   - (*b.*) A question in the geography of Europe.
3. Military subjects :—
   - (*a.*) A question in field fortification.
   - (*b.*) A question in permanent fortification.
   - (*c.*) A question in the science of arms.
   - (*d.*) A question in tactics.
   - (*e.*) A question in military surveying.

The questions set in the given subjects will not be made known to the candidates by the board until immediately before the commencement of the examination in each.

Each candidate on presenting himself before the board will be required to produce an account of his previous educational career, written both in German and French, and also a military drawing which must have been executed by himself without assistance. In accordance with an order issued by the Inspector General of Military Education, dated 20th December 1867, certain voluntary compositions on subjects announced in that order may be sent in in addition to the *Curriculum Vitæ*.

The board will themselves select an appropriate subject for an essay for the examination in French.

The Board of Studies of the War Academy.

Berlin, January 1868.

3.—Questions set in the Examination for Admission to the Academy in 1868.

Monday, 20th April 1868.

I.—*Tactics.*

A division of the enemy has been reconnoitred at Xburg ; a Prussian division is advancing by way of Nstadt on the 1st of May, preceded by

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an advanced guard of one regiment of infantry, one regiment of light cavalry, and a 6-pounder battery.*

On passing Nstadt, shortly after noon, the officer in command of the advanced guard receives the following communication from the commander of the division :—

"The division will bivouac at Nstadt, and start at 6 a.m. next morning, in order to force back the enemy. The commander of the advanced guard to leave behind at Nstadt any troops with which he thinks he can dispense, and to demand any he may be in want of."

Question. What arrangements and dispositions are made by the officer in command of the advanced guard?

II.—*Science of Arms.*

What is the difference between the shrapnel fuse of the rifled field-guns and that of the smooth-bore siege guns (short 12-prs.)? When using shrapnel where ought we to endeavour to get the bursting point with rifled guns as compared to smooth-bores? And what, in a general way, is the flight of the bullets of both kinds of shrapnel after bursting?

III.—*Surveying.*

What is meant by interpolation, and upon what mathematical principles does it depend, if three points are given? In what manner is the triangle exhibiting the error produced; how is the error removed in practice by the method of approximation, and how do the cases which arise differ from each other?

N.B.—One of the latter may be proved mathematically.

Tuesday, 21st April 1868.

IV.—*Field Fortification.*

A pontoon bridge is to be constructed, in order to enable a division to retreat behind a river. This bridge is to be covered within 48 hours of the intended retreat by a *tête-de-pont* to be held by 400 men.

The questions are :—

(*a.*) Where is the point for constructing the bridge to be selected, with reference to the course of the river and the configuration of its banks?

(*b.*) What are the requirements to be fulfilled by the *tête-de-pont*, with the object both of securing the retreat of the troops and covering the bridge?

(*c.*) What plan and profile ought to be selected for the work?

(*d.*) How can the resistance offered by the *tête-de-pont* be supported vigorously from the other side of the river?

V.—*Permanent Fortification.*

(*a.*) What determines the size of the profile of the main ditch of a fortress?

(*b.*) What *shape* of profile (viz., shallow and broad, or deep and narrow,) is to be preferred for a dry ditch, and what are the general limits of these dimensions?

(*c.*) What are these dimensions in the case of a wet ditch?

(*d.*) What are the advantages and disadvantages of both kinds of ditches?

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* A map accompanied the question.

Wednesday, 22nd April 1868.

I.—*Mathematical Sciences.*

(*a.*) *Geometry.*

At what distance in a straight line can the summit of a mountain be just seen from the sea, if the eye of the observer is 20 feet above the level of the sea, and the mountain has an elevation of 10,000 feet? And what is the terrestrial arc (in degrees) between the verticals passing through the eye of the observer and through the summit of the mountain?

(The diameter of the earth to be taken at 1,720 geographical miles of 23,644 feet each, and refraction to be neglected.)

The solution is to be effected both by construction and by calculation.

(*b.*) *Arithmetic.*

A repeating decimal fraction, to be selected by the candidate, is to be represented as an infinite geometrical series, and its sum to be computed.

(*c.*) *Questions left optional with the Candidates.*

The radius of the earth = R = 860 German miles; the radius of the moon = r = 227 miles; the shortest distance between the two surfaces of the earth and moon = A = 51,000 − 860 − 227 = 49,913 miles. The mass of the earth (not to be confounded with its volume) is 87·73 times that of the moon, and the velocity attained in a second by a body falling freely on the surface of the earth = g = 31·2648 feet = $\frac{31 \cdot 2648}{23,644}$ miles.

In the case of a body between the earth and the moon, the power of attraction exercised by the earth and the moon respectively varies (1) directly, as the masses of the two heavenly bodies; and (2) inversely, as the square of the distance which the supposed body is from the centre of the earth in the one case, and from that of the moon in the other.

The questions are:—

(1.) How many times greater is the power of attraction exercised by the earth upon a body than that exercised by the moon, supposing the body to occupy a point on the surface of the earth in the straight line between the centres of the two heavenly bodies?

And how many times greater is the power of attraction exercised upon the body by the moon than that exercised by the earth, if the point which it occupies on the straight line mentioned is on the surface of the moon?

(2.) The forces acting upon the same body bear to each other the same ratio as the velocities communicated in one second by each of these forces separately to the body, and, irrespectively of the centrifugal force, a body falling freely on the surface of the earth attains a velocity = g = 31·2648 feet in a second, owing to the power of attraction of the earth being diminished by that of the moon; the falling body being supposed to be in a straight line between the centres of both heavenly spheres. What would be the velocity attained by the body in one second if the power of attraction of the moon were non-existent?

(3.) What is the velocity attained by a body falling freely at the surface of the moon during the first second (the body being in a straight line between the centres of the two heavenly spheres) in consequence of the power of attraction of the moon being diminished by that of the earth, supposing that the power of attraction of the earth on its surface is to that

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of the moon on its surface (1) as the masses of the two heavenly spheres, and (2) as the inverse of the squares of their radii.

(4.) At what point of the straight line between the centres of the two heavenly spheres is the power of attraction exercised by the moon exactly equal to that of the earth, or what is the minimum distance to which a cannon ball must be sent from the surface of the earth, if it is not to return to the earth, but to reach the surface of the moon?

(5.) What initial velocity must the cannon ball have, the following formula being given for the calculation:—

Minimum initial velocity of a cannon ball to be sent to the surface of the moon, computed without reference to the resistance offered by the air

$$=\sqrt{\frac{87{\cdot}73 \times 2gx}{87{\cdot}73-\left(\frac{R}{r+A}\right)^2}\left\{\frac{R}{R+x}-\frac{R^2}{87{\cdot}73\,(r+A)\,(r+A-x)}\right\}}$$

In this formula $x =$ the distance obtained by the answer to the previous question (No. 4.), viz., 45,222 miles. The substitution may also be made of $\frac{87{\cdot}73}{87{\cdot}73-\left(\frac{R}{r+A}\right)^2}=1$, without giving rise to any appreciable error.

Notice.—The candidate may select any of the above questions, and he may in addition choose others referring to the same subject. The first and fourth questions are the easiest.

Thursday, 23d April 1868.

VII.—*Historical Questions and Examination in French.*

(*a.*) *History.*

What were the causes of the fall of the Roman Republic?

(*b.*) *Geography.*

The European Alps considered as the fountain-head of important rivers and lakes.

(*c.*) *French.*

The Chief of the General Staff is to select a subject for an essay.

WAR ACADEMY, BERLIN.

Arrangement of Lectures from 1st October 1868 to 1st July 1869.

First Cœtus. First Year's Students.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8–9	Physical Geography.	—	Mathematics.	Physical Geography.	Science of Arms.	Mathematics.
9–10	History.	Science of Arms.		Military History.	History.	
10–11			Tactics.	Field Fortification.		Tactics.
11–12	Mathematics.	Mathematics.			Mathematics.	
12–1			General Geography.	General Geography.	General Geography.	General Geography.

The lessons of application in mathematics take place :—
For the first division, on Tuesday from 12 to 1, and Wednesday from 8 to 10.
„ second „ „ Friday from 11 to 12, and Saturday from 8 to 10.

Second Cœtus.—Second Year's Students.

8–9	Surveying.	Physics.	History.	Mathematics.	Physics.	History.
9–10	Permanent Fortification.	Military History.	Military Geography.	History of Philosophy.	Military Administration.	Military Geography.
10–11						
11–12	Mathematics.	Tactics.	Military History.	Tactics.	Mathematics.	History of Philosophy.
12–1						

The practical exercises in surveying take place in the month of July.

THIRD CŒTUS.—THIRD YEAR'S STUDENTS.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8–9	Military Hygiene.	History of Literature.	History of Philosophy.	History of Literature.	Staff Duties.	History of Literature.
9–10	Military History.	Military History.	Art of Sieges.			Military History.
10–11				Staff Duties.	Mathematics.	
11–12	Mathematics.	Chemistry.	Mathematics.	Geodesy.		Chemistry.
12–1					Geodesy.	

The practical exercises take place in the month of July.

INSTRUCTION IN THE FRENCH LANGUAGE.

——	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
1st Division -	4–6	—	4–6	—	4–6	—
2nd „ -	—	4–6	—	4–6	—	4–6
3rd „ -	—	6–8	—	—	6–8	—

INSTRUCTION IN THE RUSSIAN LANGUAGE.

——	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
1st Division -	—	—	—	—	—	4–6
2nd „ -	—	—	4–6	—	—	—
3rd „ -	4–6	—	—	—	—	—

APPENDIX R.

NOTE ON MILITARY SURVEYING AND FIELD SKETCHING, AS PRACTISED IN FRANCE AND PRUSSIA.

Military Surveying in France and Prussia.

A greater variety of instruments appear to be used for ordinary surveying in France than is the case in England. The instrument most commonly employed, however, for surveys in which rapidity of execution is not an object, and at the same time very great accuracy is not required, is the plane-table (*planchette*), mounted on a tripod stand and furnished with levelling-screws. The sight-ruler employed with the plane-table (*alidade*) is surmounted by a telescope moving in a vertical arc, by which the instrument is laid upon the distant object. The triangulation having been effected and the main points fixed with the plane-table, the compass (*boussole*) is employed to fill in the details. The compass is generally fitted in a case which is capable of being attached to the plane-table or sketching-case. For rapid field-sketches either a more portable form of plane-table or the compass alone is used.

For all military sketching in France some means, more or less accurate according to the time at disposal, are employed to determine the altitudes of the various points and the slope of the ground. Indeed levelling (*nivellement*) is regarded as a necessary process in the execution of every military sketch, and as an operation perfectly distinct from that of the representation of the horizontal surface of the ground (*planimétrie*). Hill ground is drawn in vertical hachures according to a scale of shade corresponding to the various slopes.

An adaptation of photography to the production of military surveys nas within the last few years been introduced in France. Various forms of photographic apparatus have been devised to effect this object. A brief description of one, that of M. Chevalier, called the *planchette photographique*, will be sufficient to illustrate the principle on which the process of effecting a survey by means of photographic views of country is based. In using this instrument the prepared plate is inserted in the camera in a horizontal position. By a slow automatic motion the objective glass, which receives the image of the objects in front of it, and is placed above the horizontal plate, is made to revolve a full circle; while by means of a prism or mirror the image is projected on the prepared plate below it, which remains stationary. Every object round the horizon is consequently, as the revolution takes place, imprinted on the horizontal plate.

A panoramic view in perspective is thus obtained, in which all perpendicular lines converge to the point of sight or central point of the picture. The circular photographic view printed from the plate serves the purpose of a protractor, and by means of several such views taken at different stations the lines of direction of the various main points may be protracted on paper, and the position of the points be determined by intersection, as in ordinary triangulation.* The same method of employing perspective views as the foundation for the horizontal projection of objects has been also applied to the camera lucida. It must be added, however, that these processes, though looked upon as ingenious, do not appear to be regarded with much favour in the French military schools, or as likely to prove adapted to the exigencies of active service. The text-book on topography and geodesy used at the French *École d'état-major*,† after enumerating the advantages claimed for the

* A full account of the "*planchette photographique*" of Monsieur Chevalier, by Captain Stotherd, R.E., is given in the 17th volume of the professional papers of the Corps of Royal Engineers, published in March 1869.

† Cours de Topographie et de Géodésie, par J. F. Salneuve (1869).

employment of photography in surveying, and the objections to which such a system is open, concludes as follows :—"En résumé, l'emploi des "vues photographiques ne nous semble pas très-utile en topographie ; "il peut rendre quelques services pour l'exécution d'un canevas à "grands côtés ; utile encore peut-être, quand les points de la triangula- "tion se rapprochent, il ne nous paraît pas destiné à remplacer le levé "de détail et le cheminement. S'il réussit quelquefois à se suffire seul "ou à peu près, c'est qu'on se met dans des circonstances exceptionelles, "et même alors il est plutôt un tour de force qu'un procédé pratique."

In Prussia the instrument almost universally used for ordinary surveying is one called the *Kippregel*, which is employed in connexion with the plane-table (*Messtisch*). The plane-table is placed on a tripod stand, on which it revolves horizontally, and is provided with levelling and clamping screws like a theodolite. The *Kippregel* consists of a telescope moving in a graduated vertical arc, and supported on a long narrow brass plate, which rests on the plane-table, and is provided with a compass and spirit level used for setting up and adjusting the instrument. Vertical angles only are actually measured by the instrument; the horizontal bearings of objects are graphically represented, on the ordinary principle of the plane-table, by directing the telescope on the distant point and drawing along the edge of the brass plate which rests on the drawing-board a line representing the direction of the point. But the main peculiarity of the *Kippregel* is that it affords the means of ascertaining not only the direction but the actual distance of each point observed. A graduated staff is set up by an assistant at the distant object, and the number of graduations on the staff which can be seen between two horizontal cross-wires, with which the field of the telescope is provided, is read off. By a simple calculation, founded upon tables with which the observer is supplied, the distance of the point in yards from the station of observation is ascertained. The *Kippregel* is highly valued in Prussia; the accuracy attainable with the instrument is said to be very considerable, and, as no chaining or measurement of distances is required, a survey can be carried on by it with great rapidity. The theodolite in fact appears to be little employed in the Prussian service, except in surveys in which very great accuracy is required, for fixing a few of the most important points, previously to the employment of the Kippregel.

For more rapid field-sketching the sextant (*Reflector*) and compass (*Boussole*) are frequently used. Eye-sketching without instruments is also much practised in the Prussian military schools for purposes of hasty reconnaissance.

Contour lines (*äquidistante Horizontalen*) and hachures (*Bergstriche*) are not as a rule used in combination in Prussian military plans, except in those of the General Staff, which correspond to the Ordnance Survey maps of our service. Contours are in general only employed in plans in which considerable accuracy is required. The contour lines are laid down by levelling with the *Kippregel*, with which instrument a certain number of points on the same level are fixed, and the remainder of the line is then drawn in by eye. Contours are generally drawn at 10 feet apart. Even, however, when contours are not actually shown on the paper, levelling with some portable form of clinometer almost invariably enters into every military sketch; the actual altitudes of the various elevations above some datum point are at least approximately ascertained, and marked in figures on the sketch. In accurate surveys the level of the sea is taken as the fixed datum; in more hurried sketching it is generally, though not necessarily, the lowest point in the sketch; and when several individuals are engaged in sketching neighbouring tracts of ground, one common datum level is

fixed for all of them. In the General Staff (Ordnance Survey) maps the altitudes are shown above the level of the sea.

APPENDIX R.

Military Surveying in France and Prussia.

Two different kinds of hachures are employed for hill-sketching; both, however, are vertical, and both agree in being based upon a scale of shade adapted to different slopes of ground. According to one system, that of Müffling, the hachures differ actually in *form* for every 5° of slope up to 45°, the lines in some cases being continuous, in others broken, in others dotted, &c. According to the other system, that of Lehmann, the hachures only differ in the thickness of the stroke. The former system is adopted where greater accuracy is required, as an inspection of the plan at once shows the actual slope of the ground to one who is acquainted with the scale of shade; it is the system adopted in the plans produced under the direction of the General Staff. The other method does little more than show the *relative* slopes of the ground.

APPENDIX S.

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The French Lycées.

Note on the Organization of the French Lycées.

In the account of the military school of La Flèche allusion has been made to the system popularly called that of "Bifurcation," which for a time existed at the French Lycées, the establishments corresponding to the public schools and grammar schools of this country. According to this system, which was introduced in 1852, the ordinary school course at a *Lycée*, lasting in all for nine years, was divided into three periods, and the arrangement of the classes during each period was as follows:

(1.) *First Period*:—The Elementary Division, consisting of a two years' course, and comprising the 8th and 7th classes.

(2.) *Second Period*:—The Grammatical Division, consisting of a three years' course, and comprising the 6th, 5th, and 4th classes.

(3.) *Third Period*:—The Upper Division, consisting of a four years' course, and comprising four classes, termed respectively the 3rd, the 2nd, the Rhetoric, and the Logic class.

Up to the close of the second period the instruction of all the pupils was the same; but after this point, on entering the Upper Division (the ordinary age of admission to which was about fourteen), there was a separation or "Bifurcation" ofstudies into two courses, between which the pupil had his choice. In one section, called the literary, the instruction was mainly classical, and was specially preparatory to the "*Baccalauréat ès lettres*;" in the other it was chiefly mathematical, and was preparatory to the "*Baccalauréat ès sciences*." In the latter section of the Upper Division there was also a fifth class, called the "*Mathématiques spéciales*," for those who wished to have still higher instruction in mathematics.

This system—which corresponds nearly to that of "Modern Departments" now adopted at several English public schools—does not appear to have realized the expectations which were formed of it. It underwent various modifications, and eventually, shortly after the accession of M. Duruy to office, was finally abolished by a decree dated 4th February 1864.

This decree put an end to the arrangement by which two divisions of pupils, living under the same roof, were allowed to work separately at literary and scientific studies. By the new arrangement the division of the term of residence at the school into three periods was still retained,

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but the course of instruction was laid out for ten years—three in the Elementary Division, three in the Grammatical Division, and four in the Upper Division, which comprised the four classes of *troisième, seconde, Rhétorique*, and *Philosophie*. In the course of instruction for the two lower divisions slight modifications only were introduced, but in the Upper Division the system of a separation of studies which had hitherto prevailed was abandoned, and the instruction of all the pupils was henceforward to be carried on in common. Latin, Greek, French literature, and a modern language (at the option of the pupil) were to be studied generally in the three lower classes of the Upper Division. The additional subjects to be studied specially in the respective classes were fixed as follows :—

In the *troisième* :—History of France and of the middle ages, from the fifth to the fourteenth century; geography of Europe; arithmetic and plane geometry.

In the *seconde* :—History of France, and modern history from the fourteenth to the seventeenth century; geography of Asia, Africa, America, and Australia; continuation of plane geometry, with elementary algebra; zoology, botany, and geology.

In the *Rhétorique* :—Modern history and history of France from the time of Louis XIV to 1815; revision of universal geography; elementary principles of solid geometry, mathematical geography, and astronomy.

In the *Philosophie* :—Latin (but not Greek); French composition; psychology, logic, metaphysics, ethics; modern history from 1789 to the present time; revision and continuation of the mathematical instruction in the lower classes; elements of physics and chemistry.

The additional class of *mathématiques spéciales*, coming at the end of the course, and intended to prepare especially for the Polytechnic, was retained on the same footing as under the old system.

At the same time a special preparatory course of mathematics, lasting two years, was introduced for the benefit of those pupils who wish to complete their education in a shorter period, with the view of entering the technical schools, as, for instance, St. Cyr. With the approval of his parents a pupil may enter upon this mathematical course as soon as he has passed through the *troisième*, but he is required in this case to prove by an examination that he is thoroughly acquainted with all the regular subjects of instruction in the *seconde*. He may also commence the special course after having passed through the *seconde*, taking it instead of the courses in the *Rhétorique* and the *Philosophie*; or he may take the second year of it either in lieu of, or in addition to, the course in the *Philosophie*. No one, however, is permitted to enter upon the second year of the special course without having previously passed through the first year's instruction in it, unless he has completed his ordinary education in either the *Rhétorique* or *Philosophie*.

It must, however, be observed that even this special course is by no means exclusively mathematical and scientific. Greek, indeed, is entirely omitted in it, and both prose and verse composition in Latin are dropped; but Latin literature is read, and the first year's studies include 10 hours a week of literary instruction in Latin, French, history, geography, and one modern language; even in the second year five hours a week are devoted to Latin, French, and philosophy, besides lessons in geography and modern languages. The more technical instruction in the course comprises, during the first year, 10 hours weekly for mathematics and physical science as taught in the *seconde* and *Rhétorique*; and during the second year (1) mathematics (10 hours a week), viz. :—arithmetic, algebra, plane and solid geometry, trigonometry, elements of descriptive

geometry, mathematical geography, elements of astronomy, and elementary statics and dynamics; (2) physical science (6 hours a week), comprising gravity, heat, electricity, magnetism, acoustics, optics, and elements of chemistry.

It is also worthy of remark that this arrangement regarding the special preparatory course appears to be treated as an *exceptional concession* to practical requirements, and especially intended to meet the cases of pupils beyond the ordinary age, who may be pressed for time, and wish to take the *Baccalauréat ès sciences* or to enter a technical school. It seems to be decidedly thought preferable that a scholar should pass through the regular course of instruction, and it appears to be considered that those who have done so could in one more year learn sufficient mathematics for the entrance examination to St. Cyr, and in two years sufficient for that to the Polytechnic.*

While the former system of "Bifurcation" created at the French *Lycées* a distinct section corresponding to what is called a "Modern Department" in this country, the "preparatory course," which has been of late years adopted in its place, appears to correspond more nearly to the exceptional arrangements which are made at some English public schools to meet individual cases—such, for instance, as dropping the subject of Greek, and all verse composition—in order to allow of increased time being devoted to mathematics and natural science.

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* The above information is obtained mainly from a German work entitled "Die Fortschritte des Unterrichtswesens in den Culturstaaten Europas," by Adolf Beer and Franz Hochegger (Vienna, 1867).

APPENDIX TO COLONEL MACDOUGALL'S ACCOUNT OF THE UNITED STATES MILITARY ACADEMY AT WEST POINT.

(A.) Table of the Employment of Time at the United States Military Academy.

Class.	From Reveille to 7 a.m.	From 7 a.m. to 8 a.m.	From 8 a.m. to 11 a.m.	From 11 a.m. to 1 p.m.	From 1 p.m. to 2 p.m.	From 2 p.m. to 4 p.m.	From 4 p.m. to Sunset.	From Sunset to evening "Call to Quarters."	From evening "Call to Quarters" to half-past 9 p.m.	From half-past 9 p.m. to 10 p.m.
First.	Roll call immediately after reveille; police of quarters; cleaning arms, accoutrements, &c.; inspection of rooms, 30 minutes after reveille roll call; study.	Breakfast at 7; guard mounting at half-past 7; recreation; class parade at 8.	Recitation in military and civil engineering and science of war, &c., or drawing in these branches of study; study.	Recitation in ordnance and gunnery; cavalry exercises; study.	Dinner at 1; recreation; class parade at 2.	Recitations in ethics and law; mineralogy and geology; ordnance and gunnery; cavalry tactics; study.	Military exercises; recreation; parade at sunset.	Supper after parade; recreation; evening call to quarters.	Study.	Tatoo at half-past 9; signal to extinguish lights, and inspection of rooms at 10.
Second.			Recitation in natural and experimental philosophy; study.	Recitation in chemical physics and chemistry; cavalry exercises; study.		Drawing—landscape, with lead pencil; landscape, with colors; recitations in infantry tactics; artillery tactics; study.			Study.	
Third.			Recitation in mathematics; study.	Recitations in French, Spanish; study.		Drawing; topography, with lead pencil, pen and ink, and colors; figures with pen and ink; cavalry exercises; study.			Study.	
Fourth.			Recitation in mathematics; study.	Use of the sword, &c.; study.		Recitations in French; study.			Study.	

PROGRAMME of COURSE of STUDIES to date from July 1, 1867.

Year.	Class.	Departments.	Time. A.M.	Time. P.M.	Allotment of Time.
FIRST.	Fourth.	Mathematics	8 to 11		Every week day.
		French		2 to 4	Every week day, Saturdays excepted.
		Fencing, Bayonet Exercise, &c.	11 to 1		Every other week day from October 15th to April 1st.
SECOND.	Third.	Mathematics	8 to 11		Every week day.
		French	11 to 1		Every other week day, alternating with Spanish.
		Spanish	11 to 1		Every other week day, alternating with French.
		Drawing		2 to 4	Every week day till Nov. 1st., and every other week day from Nov. 1st to March 15th, then every week day until end of the term, Saturdays excepted.
		Riding		2 to 4	Every other week day, Saturdays excepted. from Nov. 1st to March 15th, alternating with Drawing.
THIRD.	Second.	Natural and Experimental Philosophy	8 to 11		Every week day.
		Chemistry	11 to 1		Every other week day, alternating with Riding.
		Drawing		2 to 4	Every other week day, Saturdays excepted.
		Infantry Tactics		2 to 4	Every other week day, Saturdays excepted, from Feb. 1st to March 15th, alternating with Drawing.
		Artillery Tactics		2 to 4	Every other week day, Saturdays excepted, from March 15th to April 15th, alternating with Drawing.
		Riding	11 to 1		Every other week day, except from Feb. 1st to April 15th, alternating with Chemistry.
FOURTH.	First.	Engineering, Civil and Military	8 to 11		Every week day.
		Ethics and Law		2 to 4	Every other week day, Saturdays excepted.
		Mineralogy and Geology		2 to 4	Every other week day, Saturdays excepted, from Sept. 1st to second week in December, and three weeks before June for Review, alternating with Ethics and Law.
		Ordnance and Gunnery	11 to 1 or	2 to 4	Every other week day, Saturdays excepted, from the close of January examination to April 1st, alternating with Ethics and Law, and every other week day from April 1st to June 1st, alternating with riding.
		Cavalry Tactics		2 to 4	Every other week day, Saturdays excepted, from April 1st to second week in May, alternating with Ethics and Law.
		Riding	11 to 1		Every other week day.

APPENDIX (B.)

West Point Academy.

(B.)

COURSE OF INSTRUCTION.

The studies which shall be pursued, and the instruction which shall be given at the Military Academy, are comprised under the following heads:—

1st. Infantry, Artillery, and Cavalry Tactics; and Military Police and Discipline.
2d. Use of the Sword, Bayonet, &c.
3d. Mathematics.
4th. French Language.
5th. Spanish Language.
6th. Drawing.
7th. Chemical Physics; Chemistry; Mineralogy, and Geology.
8th. Natural and Experimental Philosophy.
9th. Ordnance; Gunnery, and the duties of a Military Laboratory.
10th Ethics; and National, International, and Military Law.
11th. Practical Military Engineering.
12th. Military and Civil Engineering, and the Science of War.

Infantry Tactics, and Military Police and Discipline.

This course will conform to the system of Infantry Tactics and Military Police and Discipline, established for the government of the Army, and will comprise the schools of the soldier, company, and battalion, the evolutions of the line, the manual exercise and manœuvres of Light Infantry and riflemen, with the police and discipline of camp and garrison.

Artillery Tactics

Will comprise exercise of field, siege, and garrison artillery; manœuvres of batteries; mechanical manœuvres and target practice.

Cavalry Tactics

Will comprise the schools of the trooper mounted, of the platoon, and of the squadron; and equitation.

The use of the Sword, &c.

Will comprise the use of the small-sword, broadsword, and bayonet, and such military gymnastics as circumstances may permit.

Mathematics.

This course will comprise:

Algebra.—Fundamental operations; involution and evolution; reduction and conversion of fractional and radical quantities; reduction and solution of equations, including those of the third degree; ratios and proportions; summation of infinite series and figurate numbers; nature, construction, and use of logarithms.

Geometery.—Geometry of right lines, planes, and volumes and spherical geometry; and the formation and construction of determinate geometrical equations.

Trigonometry.—The solution of all the cases in plane and spherical trigonometry ; analytical investigation of trigonometrical formulæ ; and the construction of trigonometrical tables.

Mensuration and Surveying.—Mensuration of planes ; surfaces and volumes ; principles and practice of common land surveying ; different methods of plotting and calculating such surveys ; trigonometrical surveying ; measurement of heights and distances; levelling ; and use of instruments in plotting, surveying, &c.

Descriptive Geometry.—The graphic illustration and solution of geometrical problems in space ; and the particular application of this method to spherical projections, construction of maps, to shades and shadows, and perspective, and isometric projections.

Analytical Geometry.—Construction of algebraic expressions ; solution of determinate problems ; determination and discussion of the equations of the right line, plane and conic sections ; discussion of the general equations of the second degree involving two or three variables ; determination of loci, &c.

Differential and Integral Calculus, with its application to maxima and minima, the drawing of tangents, rectification of curves, radii of curvatures, quadratures, cubatures, &c.

French Language.

This course will comprise :

French Grammar ; reading and writing Spanish ; and translating (from text and orally) English into French and French into English.

Spanish Language.

This course will comprise :

Spanish Grammar; reading and writing French; and translating (from text and orally) English into Spanish and Spanish into English.

Drawing.

This course will comprise :

Topography, with lead pencil, pen and ink, and colours.
Figures, with pen and ink.
Landscape, with the lead pencil.
Landscape, with colours.

Chemistry, Mineralogy, and Geology.

This course will comprise :

Chemical Physics.—Magnetism ; static and voltaic electricity ; electro-magnetism ; magneto-electricity; thermo-electricity ; animal electricity ; construction and use of apparatus illustrating the principles of the foregoing subjects and their mutual relations ; Heat—its nature, sources, and effects; relation between thermal energy and other forces; measurement and equilibrium of temperatures ; thermal and aqueous phenomena of the atmosphere ; light as a chemical agent.

Chemistry.—Its general laws and language ; inorganic and organic chemistry theory of radicals, types, and substitutions ;

animal chemistry; animal nutrition, heat and force; relation between the mineral, vegetable, and animal kingdoms; applications of chemistry to agriculture, fermentation, &c.

Mineralogy.—Crystallography; structure, practical determination and uses of minerals; descriptive mineralogy.

Geology.—The earth's features; classification, structure, modes of occurrence and distribution of rocks; rock veins; division of geological history into ages; the various agents of geological changes; geology of the United States.

Natural and Experimental Philosophy.

This course will comprise:

Mechanics.—1st. General classification of the physical sciences; general constitution and physical properties of bodies; measurements of the masses; densities and weights of bodies; definitions and descriptions of natural forces. 2d. *Mechanics of Solids.*—Work; laws of equilibrium and of motion; free and constrained motion of solids; motion of projectiles; planetary motions and the general principles of physical astronomy. 3d. *Mechanics of Fluids.*—Mechanical properties of fluids; equilibrium and motion of fluids; general principles of buoyancy; equilibrium and stability of floating bodies; specific gravity; and barometrical measurements. 4th. *Mechanics of Molecules.*—General principles of sound, heat, light, and electricity, to be taught principally by lecture. 5th. *Application.*—Objects and principles of machines; friction; stiffness of cordage and adhesion; discussion of the elementary machines—cord, lever, inclined plane, wheel and axle, pullies, screw, hydraulic press, and hydraulic ram.

Acoustics.—Theory of the internal structure of bodies; nature of sound; waves in general; velocity of sound in solids, liquids, and gases, and measurement of distances by sound; qualities of sound; reflection, refraction, divergence and decay of sound; echoes, hearing and speaking-trumpets, and description of the ear.

Optics.—Nature of light; laws of its deviation; laws of vision; optical instruments; chromatics; achromatism; polarization, interference, and chromatics of polarized light.

Astronomy.—Description of the solar and stellar systems; celestial and terrestrial spheres; figure and magnitude of the earth; its motions, with the appearances and vicissitudes arising therefrom; theory of astronomical reductions; eclipses, occultations, and transits; tides and twilight; use of astronomical instruments and tables; methods of making, clearing, and calculating observations for time, latitude, longitude, the earth's magnetism and true meridian.

Ordnance and Gunnery.

This course will comprise:

Ordnance.—1st. The theory and preparation of gunpowder, cannon, artillery carriages, projectiles, implements, machines, small arms, ammunition, and military fireworks. 2d. Practical instruction in making musket, rifle, pistol, cannon and howitzer cartridges; preparation of strap, grape, and canister shot, fuzes,

slow and quick match, port-fire, signal rockets, carcases, fire-balls, light balls, and incendiary composition; loading shells, shrapnel shot and grenades; putting up stores for transportation; loading caissons; in determining the pressure on the bore of a gun; in determining the initial velocity of projectiles; in the manner of proving powder, and when circumstances will admit of it, the operation of casting cannon solid and hollow, casting of projectiles and the usual methods of testing gun metals, will be witnessed.

Gunnery.—Embracing the study of the movements of projectiles; the theory of pointing fire-arms; the different kinds of fires and their effect; the art of breaching, and the composition of batteries.

Ethics and Law.

This course will comprise:

Ethics.—1st. Common basis with law. 2d. In moral science, the pursuit of the highest good for each and all; the realization of excellence by virtue, the fulfilment of obligations to God and our country, to ourselves and others; and 3d. In its practical division, the duties, vices and passions.

Law.—1st. General principles. 2d. International law. 3d. Political organization and constitution of the United States. 4th. Rules and articles of war; and the organizations, powers, forms, and proceedings of courts-martial.

Practical Military Engineering.

This course will comprise:

The preparation of trench and battery materials—gabions, fascines, sand-bags, &c.; the manner of tracing and profiling batteries and intrenchments, by cords, pickets and laths; the defiladement of intrenchments and other works; the distribution and posting of working parties, with their implements and materials in the construction of batteries, intrenchments, &c.; the construction of the various revetments for batteries and intrenchments, the laying of platforms for field, siege, and garrison artillery; the construction of palisades, fraises, abatis, rifle-pits, and trous-de-loup; the manner of placing intrenchments and other works, together with houses, walls, fences, &c., in a state of defence; the trace, defiladement, and construction of the several kinds of trenches and saps; descent and passage of a ditch, and other operations of a siege; the manner of laying out, constructing, tamping and springing mines, both for attack and defence, with the application of electricity thereto; trestle, ponton, and other bridge exercises; military reconnoissance of a route for the march of a column of troops, and of a locality for defensive works.

Military and Civil Engineering, and the Science of War.

Military Engineering.—1st. Principles and methods of planning and constructing temporary works, comprising intrenchments, enclosed works, batteries, lines, bridge-heads, with the modes of their attack and defence. 2d. Permanent Fortifications.—Principles of planning and constructing permanent works for land and sea-coast defence, with an analysis and description of the modern

APPENDIX (B.)
West Point Academy.

systems of fortifications; the attack and defence of permanent works, including mines.

Civil Engineering.—Comprising building materials, masonry, carpentry, bridges, roads, railroads, canals, and river and harbour constructions. The theory and description of mechanism and machines. The principles of architecture.

Descriptive drawing as applied to civil engineering, architecture and fortification.

Science of War.—The military organization of states and kingdoms; composition and organization of an army; strategy illustrated and explained by military history; the operations of a campaign, comprising the movements of troops and their general dispositions for attack and defence.

The foregoing course of instruction will occupy four years; the parts assigned to each shall be as follows:

First Year.—Practical instruction in infantry tactics, police and discipline; practical instruction in artillery tactics; practical instruction in laboratory duty; instruction in small arms, &c.; first part of the course of mathematics; and first part of the course of French.

Second Year.—Practical instruction in infantry tactics; practical instruction in cavalry tactics; police and discipline; practical instruction in artillery tactics; remainder of the course of mathematics; remainder of the course of French; the course of Spanish; and first part of the course of drawing.

Third Year.—Theoretical and practical instruction in infantry tactics, police and discipline; theoretical and practical instruction in artillery tactics; practical instruction in cavalry tactics; natural and experimental philosophy; chemical physics and chemistry; and remainder of the course of drawing.

Fourth Year.—Practical instruction in infantry tactics, police and discipline; practical instruction in artillery tactics; theoretical and practical instruction in cavalry tactics; military and civil engineering, and the science of war; theoretical and practical instruction in ordnance and gunnery; practical military engineering; ethics and law; and mineralogy and geology.

APPENDIX (C[1])
West Point Academy.

(C.)

DETAIL OF CAMP DUTIES OF THE CORPS OF CADETS, WEST POINT.

Immediately after the June examination, the encampment (of the 1st, 3rd, and 4th classes, the 2nd being on furlough) begins. It occurs generally about the 20th of June and continues till the 30th of August. The commandant and his four assistants accompany them.

Until the 5th of July, the 4th class, who are the new comers, not being sufficiently drilled to do sentinel duty, the duties are light and as follows:—

Reveillée, 5 a.m.
Policing camp (immediately after) by the members of guard that marched off the morning before.
Surgeon's call, 6.30 a.m.
Breakfast „ 7 „
Parade „ 8 „
Guard mounting, immediately after parade.
Dinner, 1 p.m.
Policing camp, 4 p.m.
Parade, sunset.
Tattoo, 9.30 p.m.
Taps (lights out) 9.45 p.m.

During this time the 4th class has squad drills three times a day, lasting an hour each, at 5.30 and 11 a.m. and 5.30 p.m.
The guard duty is done at this time by the 1st and 3rd classes.
The guard consists of—

2 Officers of the Guard - -	1st class officers.
1 Sergeant - - - -	2nd „
3 Corporals - - -	3rd „
18 Privates - - - -	1st & 3rd classes.

There are, besides, an officer of the day (a cadet captain or lieutenant) to see that all the duty of the camp is done properly, and to report all violations of regulations and orders; and an *officer in charge*, one of the commandant's assistants, who has the charge of the camp, and acts for the commandant during his absence.

On the 5th of July, the 4th class is ready for guard duty, and assists the other classes in it. The programme for the rest of the time is—

Reveillée, 5 a.m.
Policing camp just after reveillée.
Infantry company drills, for all classes, 5.30 a.m.
Surgeon's call, 6.30 a.m.
Breakfast „ 7 „
Parade „ 8 „
Guard mounting, immediately after parade.
Siege and sea-coast artillery drill for 1st class
Light Battery drill - - 2nd „ } 9 till 10 a.m.
Foot Light Battery drill - 4th „
Laboratory duty for two weeks, signalling, practical and topographical engineering, for rest of term for 1st class. } 10 till 12 a.m.
Laboratory duty for 3rd class for two weeks, 10 till 12 a.m.
Infantry squad drill for 4th class, 10 till 11 a.m.
Dinner, 1 p.m.
Policing camp, 4 p.m.
Infantry company's drill for all classes, 5.30. p.m.
Parade, sunset.
Supper, after parade.
Tattoo, 9.30 p.m.
Taps, 9.45 „

APPENDIX (D.)
West Point Academy.

(D.)

FORM OF WEEKLY CLASS REPORT EMPLOYED.

UNITED STATES MILITARY ACADEMY.

First Class. Second Section. DEPARTMENT of ENGINEERING.
Report for the Week ending _____ 18 .

Scale of Daily Merit.	Thorough.	Good.	Fair.	Tolerably.	Very Imperfect.	Complete Failure.	Maximum for the Week.
	3	2·5	2	1·5	1	0	12

No.	Names.	M.	T.	W.	T.	F.	S.	Total.	Progress during the Week.
1	A. - -	—	3·0	—	2·8	2·7	3·0	11·5	
2	B. - -	2·8	—	3·0	—	3·0	—	11·8	
3	C. - -	—	3·0	—	2·9	—	2·9	11·8	
4	D. - -	3·0	2·9	—	—	—	2·9	11·8	
5	E. - -	2·8	—	2·8	—	2·7	—	11·1	
6	F. - -	3·0	—	3·0	3·0	—	—	12·0	
7	G. - -	2·9	—	3·0	—	3·0	—	11·9	
8	H. - -	3·0	—	—	3·0	—	3·0	12·0	
9	I. - -	3·0	—	—	2·9	2·7	—	11·5	

A._____ D., _____
Assistant Professor of Engineering.

To D. H. M., _____ LL.D.,
Professor U.S.M.A.

NOTE.—*Rule* for determining the total amount of marks to be carried out on the weekly Class Reports.

At the end of the week, take the greatest number of days that any individual of the section has recited; this number multiplied by 3 will be the maximum for the week. The total for any individual who has recited the greatest number of days will be the sum of his daily marks. To obtain the total for any one who has recited a less number of days, make the following proportion—as the number of days he has recited is to the greatest number of days, so is the sum of his daily marks to the required total.

APPENDIX (E.)
West Point Academy.

(E.)

CLASSIFICATION OF OFFENCES.

First Class counts 5 demerit.

And embraces offences of the following nature :—
Breach of arrest.
Mutinous conduct.
Disobedience of orders.
Gross neglect of duty.
Using profane oaths or other execrations.
Going beyond prescribed limits.

Disrespect to a superior officer.
Out of quarters after *taps*.
Introduction into quarters or use of intoxicating liquors ; cards, or other games of chance.
Traducing or defaming.

Second Class counts 4 *demerit.*

Absent from quarters at night before tattoo.
Absent from Academy, parades, or drills.
Visiting in study hours.
Neglect of duty on post (sentinel).
Orderlies allowing smoking at unauthorized times ; cooking and unnecessary noise in study hours.
Unmilitary conduct.
Disorderly conduct in mess hall, Academy, or parade, under arms.
General neglects of duty.
Defaming or damaging quarters or other pblic buildings.
Insurbordinate conduct.

Third Class counts 3 *demerit.*

Absence from quarters during the day for not more than half an hour.
Improper conduct in Academy or in ranks.
Inattentions on post as sentinels.
Absence from roll call ; relief parades.
Carelessness under arms.
Deserting ranks when not under arms.
Disorderly conduct at any undress parade.
Leaving church during service.
Playing on musical instruments in study hours.
Unauthorized articles in possession or in quarters.
Throwing missiles in vicinity of barracks.
Making unnecessary noise during study hours.

Fourth Class counts 2 *demerit.*

Absence from Academy, unnecessary, for more than 20 minutes.
Inattention under arms or in Academy.
In bed during the day.
Unnecessary noise in quarters not in study hours.
Unsteadiness in ranks.
Wearing ununiform articles.
Going to or from Academy mess hall without marching.

Fifth Class counts 1 *demerit.*

"Lates" and little irregularities, *i.e.*, button off coat; shoes not blacked ; dress out of order, &c.

NOTE.—The foregoing includes characteristic specimens *only* of the different classes.

APPENDIX (F.)
West Point Academy.

(F.)

Head Quarters U.S. Corps of Cadets, West Point, N.Y.

ABSTRACT of DELINQUENCIES for October 11th 1868.

Names.		Offences.	Reporting Officer.
		1 (T.G.P.)	
~~Birnie~~	E	~~Absent from quarters at inspection of sentinel, 7.10 and 7.20 p.m.~~	*Hun.
		1	
Birkhimer	—	Carelessness, rendering explanation with wrong date.	Col. Black.
		1	
Brown	E	Dirty collar at inspection and before church	*Price, P.M.
		1	
Cobb	E	Rifle not in rack at inspection 9.10 a.m.	Lt.-Col. Hildt.
		4 (T.G.P.)	
~~Elliott~~	E	~~Visiting at inspection by sentinel 10.15 and 10.20 a.m. (1 ex.)~~	*Hun.
		2	
Firth	E	Inattention, gazing about in ranks at church r.c.	*McCauley.
		1 (T.G.P.)	
~~Holden~~	E	~~Cap on side of head at church, r.c.~~	Lt.-Col. Hildt.
		1	
James	—	Not taking place in ranks properly at breakfast, r.c.	*Stevens.
		1	
Mott	—	Dirty waist plate at guard mounting	*Rockwell, C.
		3	
Mott	E	Sentinel, not walking post properly, 8 and 9 p.m. (2 ex.)	Capt. Clarke.
		1	
Quinan	—	Late at reveille, r.c.	Fitzsimmons.
		1	
Ribbel	E	Coat unbuttoned in area, 6.50 and 7 a.m.	*Miller, M.
		1	
Robinson, H. E.	—	Bedding not folded at police inspection (1con.)	*Fitzsimmons.
		OMISSIONS FOR OCTOBER 10th 1868.	
		2	
Nichols	—	Starting to come to a "trail" at command "present arms," at parade.	*Postley.
		1	
Randolph	—	Waist plate out of order at guard mounting	*Homer.

(Signed) H. M. BLACK,
Commandant of Cadets.

N.B.—The figures in red ink above the centre of each line represent the marks of demerit due to the several offences.
(Ex.) signifies extra parade.
r.c. „ recreation curtailed.
(1 con.) signifies 1 confinement.
Those marked thus * are cadet officers who have reported the offences.
The superintendent affixes his initials to offences erased by him.
The absence of the letter E denotes that no explanations were forwarded.

Explanations forwarded of the preceding Offences.

West Point, N.Y., October 11th, 1868.

Offence.—Absent from quarters at inspection of sentinel 7.10 and 7.20 p.m.

Explanation.—I had gone across the hall to see a classmate about the lesson; was gone but a moment, and was returning when the sentinel inspected.

Respectfully submitted,
(Signed) R. BIRNIE,
Cadet Priv. 4th Class "A" Co.

To Col. H. M. Black,
Comdg. Corps Cadets.

West Point, N.Y., October 11th, 1868.

Offence.—Dirty collar at inspection before church.

Explanation.—It got mussed just before time for church, and I had no time to change it.

Respectfully submitted,
(Signed) GEORGE L. BROWN,
Cadet Priv. 4th Class "B" Co.

To Col. H. M. Black,
Comdg. Corps Cadets.

West Point, N.Y., October 11th, 1868.

Offence.—Rifle not in rack at inspection 9 and 10 a.m.

Explanation.—My own gun was in its place in the rack. The rifle in question was my room-mate's, and had been left by the acting first serjeant of the company, after guard mounting, leaning against the side of the rack. I looked around the room two or three times to see that everything was in its place, but did not observe the position of the rifle until Col. Hildt directed my attention to it.

Respectfully submitted,
(Signed) E. M. COBB,
Cadet Priv. 2d Class Co. "D."

To Col. H. M. Black,
Comdg. Corps of Cadets.

West Point, N.Y., Oct. 11th, 1868.

Offence.—Visiting at inspection by sentinel, 10.15 and 10.20 a.m.

Explanation.—I left my room to get some help on a problem in algebra. It is the first time I have been reported for the above offence.

Respectfully submitted,
(Signed) G. F. ELLIOTT,
Cadet Priv., 4th Class "A" Co.

To Colonel H. M. Black,
Commanding Corps Cadets.

APPENDIX (F.)

West Point Academy.

West Point, N.Y., Oct. 11th, 1868.

Offence.—Inattention, gazing about in ranks at church, r.c.

Explanation.—I do not recollect of gazing about in ranks, and think the report is a mistake.

Respectfully submitted,
(Signed) C. C. FIRTH,
Cadet Priv., 4th Class, "A" Co.

To Colonel H. M. Black,
Commanding Corps of Cadets.

West Point, N.Y., Oct. 11th, 1868.

Offence.—Cap on side of head at church, r.c.

Explanation.—The report is correct. I noticed it myself and adjusted it. I was not spoken to about same. It was not put on so when I fell in ranks.

Respectfully submitted,
(Signed) EDWARD S. HOLDEN,
Cadet Sergt., 2nd Class, "D" Co.

To Colonel H. M. Black,
Commandant Corps Cadets.

West Point, N.Y., Oct. 11th, 1868.

Offence.—Sentinel not walking post properly, 8 and 9 p.m.

Explanation.—The room of the corporal of the 3rd relief opened on my post. In the course of the evening he asked me if I knew what time his relief went on, and as I did know, I stood in front of his door long enough to tell him.

Respectfully submitted,
(Signed) WALLACE MOTT,
Cadet Priv., 3rd Class, "B" Co.

To Colonel H. M. Black,
Commanding Corps Cadets.

U.S.M.A. West Point, N.Y.,
October 11th, 1868.

Offence:—Coat unbuttoned in area, 6.50. and 7 a.m.

Explanation:—There were only three or four of buttons unbuttoned. I had left my room before I had buttoned them all, because I was afraid I might possibly get a late for roll call and so I buttoned them on the way out there.

Respectfully submitted
(Signed) C. H. RIBBEL,
Cadet Priv. 3rd Class "B" Co.

To Colonel H. M. Black,
Comdg. Corps Cadets.

(G.)

SPECIAL REGULATIONS FOR BARRACKS.

Orderlies of Rooms.

The particular attention of orderlies is directed to those paragraphs of the regulations for the U.S. Military Academy specifying their duty :

Cadets.

The hours of recitation of each cadet will be posted on the back of the door of his room. When a room is being washed out by the policeman, on reporting to the officer of the day, and stating to him the number of some room in his own division he wishes to visit, a cadet will be permitted to visit that particular room until his own can be occupied. During the day the uniform coat will be worn, and buttoned throughout till 9 a.m. ; at Sunday morning inspection side-arms will also be worn. After 9 a.m. any uniform garment, or dressing-gown, may be worn in their own rooms, but at no time will cadets be in their shirt-sleeves unnecessarily. During the "call to quarters," between "inspection call" in the morning and "tattoo," the following arrangement of furniture, &c., will be required :

Accoutrements.

Dress Cap.—On gun-rack shelf.

Cartridge Boxes, Waist Belts, Sabres, Forage Caps.—Hung on pegs near gun-rack shelf.

Muskets.—In gun-rack, bayonets in the scabbards.

Spurs.—Hung on peg with sabres.

Bedsteads and Bedding

Bedsteads.—In alcove against side wall of the room, the head against the back wall.

Bedding.—Mattrass to be folded once ; blankets and comforters, each one to be neatly and separately folded, so that the folds shall be of the width of an ordinary pillow, and piled at the head of the bedstead in the following order, viz. : mattrass, sheets, pillows, blankets, and comforters, the front edge of this pile to be vertical. On Sunday afternoon the beds may be made down and used.

Clothes Press.

Books.—On the top of the press, against the wall, and with the backs to the front. Brushes, tooth and hair, combs, shaving implements and materials, such small boxes as may be allowed, vials, &c., to be neatly arranged on the upper shelf.

Belts, collars, gloves, handkerchiefs, socks, &c. to be neatly arranged on the second shelf from the top. Sheets, pillow-cases, shirts, drawers, white pants, &c., to be neatly arranged on the other shelfs, the heaviest articles on the lowest shelf.

Arrangement.—All articles of the same kind are to be carefully and neatly placed in separate piles. The folded edges of these

APPENDIX (G.) West Point Academy.

articles to be to the front, and even with the front edge of the shelf. Nothing will be allowed between these piles of clothing and the back of the press, unless the want of room on the front edge renders it necessary.

Dirty Clothes.—To be kept in clothes bag.

Shoes and Over-Shoes.—To be kept clean, dusted, and arranged in a line where they can be seen by the inspector, either at the foot of the bedstead, or at the side near the foot.

Woollen Clothing, Dressing-Gown, and Clothes Bag.—To be hung on the pegs in alcove, in the following general order, from the front of the alcove to the back: over coat, dressing-gown, uniform coats, jackets, pants, clothes bag.

Furniture.

Broom—To be kept behind the door.

Tin Box for cleaning Materials.—To be kept clean, and in the fire-place.

Spittoon.—To be kept on one side of the hearth near mantelpiece.

Chairs and Tables.—On no occasion to be in alcoves; the chairs, when not in use, to be against the owners' tables.

Looking-glass.—At the centre of the mantelpiece.

Wash-stand.—To be kept clean, in front and against alcove partition.

Washbasin.—To be kept clean, and inverted on the top of the wash-stand.

Water bucket.—To be kept on shelf of wash-stand.

Slop bucket.—To be kept near to and on side of wash-stand, opposite door. Baskets, pictures, clocks, statues, trunks, and large boxes, will not be allowed in quarters.

Curtains.—Window curtains—Only uniform allowed, and to be kept drawn back during the day. Alcove curtains, only uniform allowed, and to be kept drawn, except when dressing, and between "tattoo" and "reveille." Curtains of clothes press to be kept drawn, except when policing room.

Floor.

To be kept clean, and free from grease, spots, and stains.

Walls and Wood-Work.

To be kept free from cobwebs, and not to be injured by nails or otherwise.

Heating Apparatus, Screen and Top.

To be kept clean, and not to be scratched or defaced.

These regulations will be strictly obeyed and enforced.

By order of Brevet-Col. Black,

PAUL DAHLGREN,
Cadet Lieut. and Adjutant.

Head Quarters Corps of Cadets,
West Point, New York, April 1, 1868.

LONDON:
Printed by GEORGE E. EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty.
For Her Majesty's Stationery Office.

Education of Naval Officers.

[C. 203] Report of the Committee on the Higher Education of Naval Officers; with Minutes of Evidence, and Appendix.

The above paper, being of folio size, will be found in the Volume lettered "Vol XIX. XX. XXV. folio portions"

MILITARY EDUCATION COMMISSION.

ACCOUNTS

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FOR HER MAJESTY'S STATIONERY OFFICE.

1870.